

# 10

PAPER  
SET



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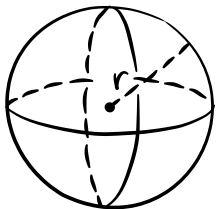
# CLASS 10TH MATHS GUESS PAPERS

Prepared by:

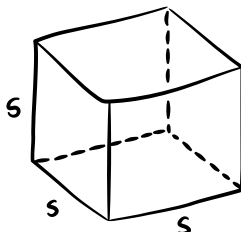
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$$\frac{x}{a} + \frac{y}{b} = 1$$



$$V = \frac{4}{3} \pi r^3$$



$$V = s^3$$



$$1+2=3$$
$$3+5=$$



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**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 1  
CLASS – X (2025-26)**

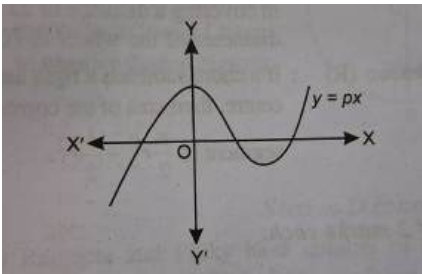
**Maximum Marks: 80**

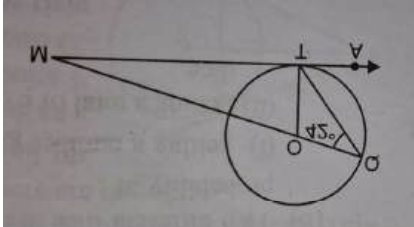
**Time: 3 hours**

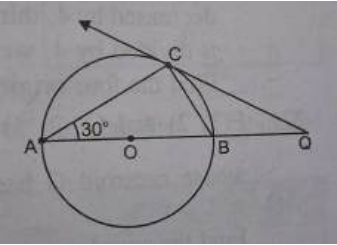
**General Instructions:**

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
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3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
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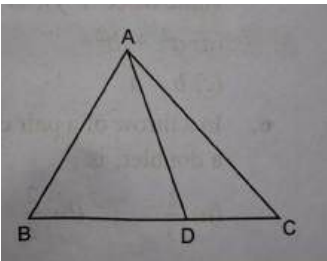
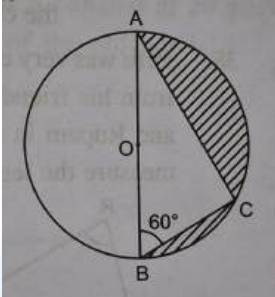
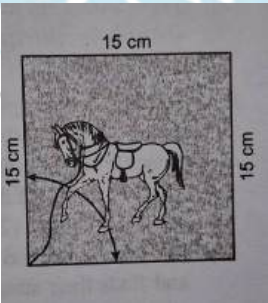
| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                                                                                                                                                                                                                                                                         |              |
|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Marks</b> |
| <b>1.</b>                                                                       | <p>The graph of <math>y=p(x)</math> is given in the figure for the polynomial <math>p(x)</math>. The number of zeroes are:</p>  <p>(A) 2                      (B) 4                      (C) 3                      (D) 1</p>                                                                                                       | <b>1</b>     |
| <b>2.</b>                                                                       | <p>If <math>\alpha</math> and <math>\beta</math> be the zeroes of the quadratic polynomial <math>ax^2+bx+c</math>, then the value of <math>\sqrt{\frac{\alpha}{\beta}} + \sqrt{\frac{\beta}{\alpha}}</math>, is:</p> <p>(A) <math>\frac{1}{ac}</math>                      (B) <math>\frac{-\sqrt{b}}{ac}</math>                      (C) <math>b</math>                      (D) <math>\frac{-b}{\sqrt{ac}}</math></p> | <b>1</b>     |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                           |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 3.  | <p>If the discriminant of <math>3x^2+2x+a=0</math> is double that of <math>x^2-4x+2=0</math>, then the value of a, is:</p> <p>(A) -2                      (B) -1                      (C) 1                      (D) 2</p>                                                                                                                                                                                                | 1 |
| 4.  | <p>In the given figure, O is the centre of the circle with <math>\angle TQM=42^\circ</math>, then <math>\angle ATQ</math> would be equal to:</p>  <p>(A) <math>48^\circ</math>                      (B) <math>96^\circ</math>                      (C) <math>42^\circ</math>                      (D) <math>84^\circ</math></p>         | 1 |
| 5.  | <p>If <math>ax+by=a^2-b^2</math> and <math>bx+ay=0</math>, then the value of <math>(x+y)</math>, is:</p> <p>(A) <math>a^2+b^2</math>                      (B) <math>a-b</math>                      (C) <math>b-a</math>                      (D) <math>a^2-b^2</math></p>                                                                                                                                                | 1 |
| 6.  | <p>In a throw of a pair of dice, the probability of getting a doublet, is:</p> <p>(A) <math>\frac{1}{3}</math>                      (B) <math>\frac{2}{3}</math>                      (C) <math>\frac{1}{6}</math>                      (D) <math>\frac{5}{12}</math></p>                                                                                                                                                 | 1 |
| 7.  | <p>The algebraic sum of the deviations of a frequency distribution from its mean, is:</p> <p>(A) a non zero number                      (B) always positive<br/>(C) zero                      (D) always negative</p>                                                                                                                                                                                                     | 1 |
| 8.  | <p>The coordinates of the point which divides the line segment joining (1,-2) and (4,7) internally in the ratio 1:2, are:</p> <p>(A) (2,1)                      (B) (5,3)                      (C) (1,2)                      (D) (3,5)</p>                                                                                                                                                                               | 1 |
| 9.  | <p>The sum of the first n terms of an A.P is <math>2n^2+5n</math> then its nth term is:</p> <p>(A) <math>4n+3</math>                      (B) <math>4n-3</math>                      (C) <math>3n-4</math>                      (D) <math>3n+4</math></p>                                                                                                                                                                 | 1 |
| 10. | <p>The mid value or class marks of class intervals are used to calculate:</p> <p>(A) Median                      (B) Mean                      (C) Mode                      (D) Range</p>                                                                                                                                                                                                                                | 1 |
| 11. | <p>A toy is in the form of a cone mounted on a hemisphere with same radius. The diameter of the base of the conical portion is 6 cm and its height is 4cm. Then the surface area of the toy is:</p> <p>(A) <math>24\pi \text{ cm}^2</math>                      (B) <math>33\pi \text{ cm}^2</math>                      (C) <math>35\pi \text{ cm}^2</math>                      (D) <math>36\pi \text{ cm}^2</math></p> | 1 |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 12. | <p>In the given figure, AB is diameter of a circle with centre O and QC is a tangent to the circle at C. If <math>\angle CAB = 30^\circ</math>, then <math>\angle CQA</math> is:</p>  <p>(A) <math>45^\circ</math>                      (B) <math>90^\circ</math>                      (C) <math>30^\circ</math>                      (D) <math>60^\circ</math></p>                                                                                        | 1 |
| 13. | <p><math>(\sec^2\theta + \operatorname{cosec}^2\theta - \tan^2\theta - \cot^2\theta)</math> is equal to:</p> <p>(A) -2                      (B) 0                      (C) 2                      (D) 1</p>                                                                                                                                                                                                                                                                                                                                 | 1 |
| 14. | <p>If <math>\cos 30^\circ = \sin(45^\circ + x)</math>, then x is equal to:</p> <p>(A) <math>0^\circ</math>                      (B) <math>15^\circ</math>                      (C) <math>20^\circ</math>                      (D) <math>30^\circ</math></p>                                                                                                                                                                                                                                                                                 | 1 |
| 15. | <p>If in <math>\triangle ABC</math>, <math>DE \parallel BC</math>, <math>AC = 4.8</math> cm and <math>AD:DB = 3:5</math>, then the length of EF, is:</p> <p>(A) 1.8 cm                      (B) 1.6 cm                      (C) 3.2 cm                      (D) 3.6 cm</p>                                                                                                                                                                                                                                                                  | 1 |
| 16. | <p>The volume of the largest sphere that can be cut off from a cylindrical log of wood of base diameter 2cm and height 4cm is:</p> <p>(A) <math>\frac{10}{3}\pi \text{ cm}^3</math>                      (B) <math>\frac{20}{3}\pi \text{ cm}^3</math>                      (C) <math>4\pi \text{ cm}^3</math>                      (D) <math>\frac{4}{3}\pi \text{ cm}^3</math></p>                                                                                                                                                        | 1 |
| 17. | <p>Two coins are tossed simultaneously. The probability of getting at least one tail is:</p> <p>(A) <math>\frac{1}{4}</math>                      (B) <math>\frac{1}{2}</math>                      (C) <math>\frac{3}{4}</math>                      (D) <math>\frac{4}{3}</math></p>                                                                                                                                                                                                                                                      | 1 |
| 18. | <p>The point which lies on the perpendicular bisector of the line segment joining the points P(3,7) and Q(-3,-7) is :</p> <p>(A) (3,0)                      (B) (0,3)                      (C) (0,-3)                      (D) (0,0)</p>                                                                                                                                                                                                                                                                                                    | 1 |
|     | <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false.</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |   |



|                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 19.                                                                                                                    | <b>Assertion(A):</b> If LCM of [a,b] is 182 and HCF of [a,b] is 13, then product of a and b is 2366<br><b>Reason(R):</b> (LCM of a,b) $\times$ (HCF of a,b) = a $\times$ b.                                                                                                                                                                                                                                                                                                                                                                                                | 1 |
| 20.                                                                                                                    | <b>Assertion(A):</b> A bike wheel makes 5000 revolutions in covering a distance of 22 km, then diameter of the wheel is 70 cm.<br><b>Reason(R):</b> If a chord subtends a right angle at the centre, then area of the corresponding segment is $\frac{\pi r^2}{2} - \frac{1}{2}r^2$ .                                                                                                                                                                                                                                                                                      | 1 |
| <p style="text-align: center;"><b>(Section – B)</b><br/> <b>Section B consists of 5 questions of 2 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
| 21.<br>(a)                                                                                                             | A circular track around a sports ground has circumference of 1080 m. Two cyclists Niharika and Kizzu start together and cycled at constant speeds of 6m/s and 9m/s respectively around the circular track. After how many minutes will they meet again at the starting point.<br><p style="text-align: center;"><b>OR</b></p> Four positive integers sum to 125. If the first of these numbers is increased by 4, second is decreased by 4, third is multiplied by 4 and fourth is divided by 4, we find the four equal numbers. Find the four original positive integers. | 2 |
| 22.                                                                                                                    | P(3,2) and Q(-2,1) are the vertices of $\Delta PQR$ whose centroid G has the coordinates $(\frac{5}{3}, \frac{-1}{3})$ . Find the coordinates of the third vertex R.                                                                                                                                                                                                                                                                                                                                                                                                       | 2 |
| 23.                                                                                                                    | If $\frac{3\sin^2 45^\circ 2\cos^2 30^\circ}{\sin^2 90^\circ + 4\cos^2 45^\circ} = \frac{x\sin^2 30^\circ \cos^2 60^\circ}{4\cos^2 45^\circ}$ , find the value of x.                                                                                                                                                                                                                                                                                                                                                                                                       | 2 |
| 24.<br>(a)                                                                                                             | If a fair coin is tossed twice, find the probability of getting: —<br>(i) atmost one head<br>(ii) at least one tail.<br><p style="text-align: center;"><b>OR</b></p> Two different dice are thrown together, find the probability of:<br>(i) getting a number greater than 3 on each die.<br>(ii) getting a total of 6 or 7 of the numbers on two dice.                                                                                                                                                                                                                    | 2 |
| 25.                                                                                                                    | Find the point on the y-axis which is at a distance of $2\sqrt{13}$ units from the point (-4,2).                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| <p style="text-align: center;"><b>(Section – C)</b><br/> <b>Section C consists of 6 questions of 3 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
| 26.<br>(a)                                                                                                             | In two triangles $\Delta ABC$ and $\Delta PQR$ , AM and PN are respectively the perpendiculars on BC and QR. If $\Delta ABC \sim \Delta PQR$ , then prove that<br>(I) $\Delta AMC \sim \Delta PNR$<br>(II) $\frac{AM}{PN} = \frac{BC}{QR}$                                                                                                                                                                                                                                                                                                                                 | 3 |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |          |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                       | <p style="text-align: center;"><b>OR</b></p> <p>(b) In the figure, D is a point on side BC of <math>\triangle ABC</math>, such that <math>BD:CD=AB:AC</math>. Prove that AD is the bisector of <math>\angle BAC</math>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                            |          |
| <p>27.</p> <p>(a)</p> | <p>In the given figure, a circle is drawn on AB as diameter, with centre O. If <math>\angle ABC=60^\circ</math>, then find the ratio of area of larger to smaller shaded regions.</p>  <p style="text-align: center;"><b>OR</b></p> <p>A horse is tied to a peg at one corner of a square shaped grass field of size 15m by means of 5m long rope. Find:</p> <p>(i) the area of that part of the field in which the horse can graze.</p> <p>(b) (ii) the increase in the grazing area of the rope were 10m long instead of 5m.<br/>(use <math>\pi=3.14</math>)</p>  | <p>3</p> |
| <p>28.</p>            | <p>A truck travels a distance of 150 km at a certain average speed and then travels another 200 km at an average speed which is 20km/h more than the first speed. If the truck travels the total distance in 3 hours, then find the initial average speed of the truck.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>3</p> |
| <p>29.</p>            | <p>Prove that <math>\sqrt{5}</math> is an irrational number.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>3</p> |
| <p>30.</p>            | <p>If <math>\alpha</math> and <math>\beta</math> are zeroes of the quadratic polynomial <math>2x^2+2(m+n)x+m^2+n^2</math>, then form the quadratic polynomial whose zeroes are <math>(\alpha+\beta)^2</math> and <math>(\alpha-\beta)^2</math>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>3</p> |
| <p>31.</p>            | <p>If <math>\operatorname{cosec}\theta-\sin\theta=p^3</math> and <math>\sec\theta-\cos\theta=q^3</math>, then prove that <math>p^2q^2(p^2+q^2)=1</math>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>3</p> |

(Section – D)

Section D consists of 4 questions of 5 marks each

32. The shadow of tower standing on a level plane is found to be 50m longer when sun's elevation is  $30^\circ$  than what it is  $60^\circ$ . Find the height of the tower. 5

33. (a) Ranjeeta and pinky have number of mangoes , Ranjeeta says to pinky, "If you give me 10 of your mangoes, I will have twice as many as left with you". Pinky replies, "If you give me 10 of your mangoes, I will have thrice the number of mangoes as left with you". Find the original number of mangoes each had. 5

OR

(b) The sum of a two-digit number and the number obtained by reversing the digit is 55. If the digits of the number differ by 3, find the number. How many such numbers are there?

34. The following frequency distribution gives the monthly consumption of electricity in a locality of 80 families. If the median is 206, find the missing frequencies x and y. 5

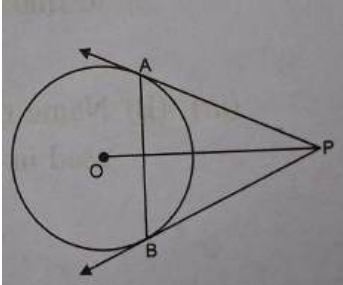
| Monthly Consumption of Electricity (in units) | Number of Families |
|-----------------------------------------------|--------------------|
| 170 – 180                                     | 4                  |
| 180 – 190                                     | x                  |
| 190 – 200                                     | 12                 |
| 200 – 210                                     | 15                 |
| 210 – 220                                     | 13                 |
| 220 – 230                                     | y                  |
| 230 – 240                                     | 14                 |
| 240 – 250                                     | 6                  |

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OR

(b) Weekly income of 600 families is tabulated below:

| Weekly income (in ₹) | Number of Families |
|----------------------|--------------------|
| 0 – 1000             | 250                |
| 1000 – 2000          | 190                |
| 2000 – 3000          | 100                |
| 3000 – 4000          | 40                 |
| 4000 – 5000          | 15                 |
| 5000 – 6000          | 5                  |
| Total                | 600                |

|     |                                                                                                                                                                                                                                                            |   |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 35. | <p>In the given figure, PA and PB are two tangents drawn from an external point P to a circle with centre O. Prove that OP is the right bisector of line segment AB.</p>  | 5 |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|

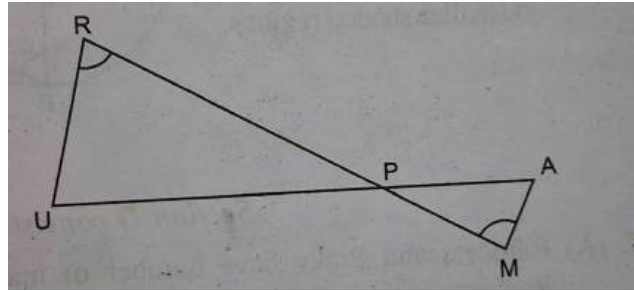
**(Section – E)**

**Section E consists of 3 case study-based questions of 4 marks each.**

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| 36. | <p>Harjinder was playing a number card game. In the game, some number cards having both positive or negative numbers are arranged in a row such that they are forming an A.P. On his first turn, Harjinder picks up 5<sup>th</sup> and 12<sup>th</sup> card and finds their sum to be -61. On the second turn he picks up 9<sup>th</sup> and 18<sup>th</sup> card and finds their sum to be -110.</p> <p>Based on the information given above, answer the following questions:</p> <p>(i) Write the difference between the numbers on any two consecutive cards.</p> <p>(ii) Write the number on first card.</p> <p>(iii) (a) Find the sum of numbers on the first fifteen cards.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) Find the number on the 23<sup>rd</sup> card.</p>                                                                                            | <p>1</p> <p>1</p> <p>2</p> <p>2</p> |
| 37. | <p>One day Amit was going to home from school. In the way, he saw a carpenter working on wood. He found that he is carving out a cone from a cylinder with same height and same diameter. The height of the cylinder was 24 cm and base radius was 7cm. While watching this, some questions came into Amit's mind. Help Amit to find the answer of the following questions.</p>  <p>Based on the above given information, answer the following questions:</p> <p>(i) Find the slant height of conical cavity.</p> <p>(ii) Find the curved surface area of the conical cavity.</p> <p>(iii) (a) Find the volume of the wood left after carving out the required conical cavity.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) Find the external curved surface area of the cylinder.</p> | <p>1</p> <p>1</p> <p>2</p> <p>2</p> |



38. Puru was very excited to receive a fancy jumbo pencil from his friend Rupam. Puru's father engaged Puru and Rupam in an activity of drawing triangles and measure the lengths of triangle with ruler.



Starting from P, Puru drew lengths  $PR = 12\text{cm}$  and  $PU = 15\text{cm}$ .  $RU = 6\text{cm}$  in the left side of P while Rupam drew length  $PM = 4\text{cm}$  and made  $\angle M = \angle R$ .

Based on the above given information, answer the following questions:

- (i) Find the length of PA.
- (ii) Find the length of AM.
- (iii) (a) Is  $\Delta RUP \sim \Delta MAP$ , which criteria is used to find the above lengths?

**OR**

- (b) Name the similarity criteria other than used in the given triangles.

1  
1  
2  
2



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**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 2  
CLASS – X (2025-26)**

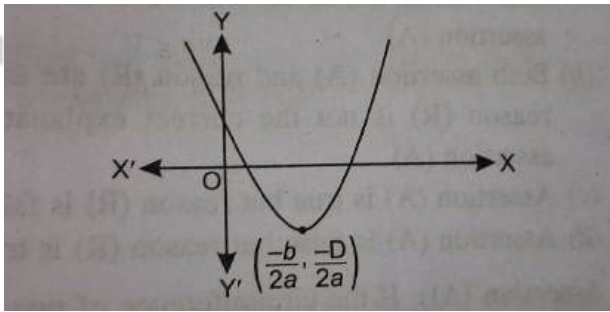
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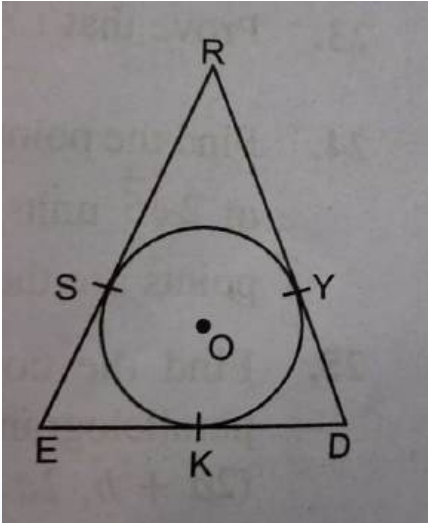
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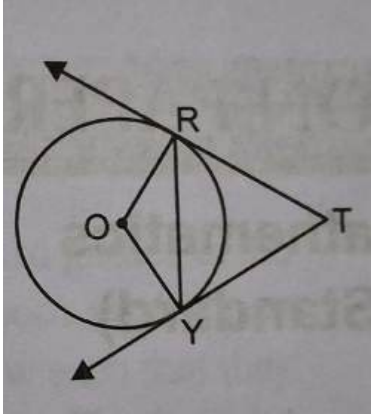
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| <p align="center"><b>(Section A)</b><br/><b>Section A consists of 20 questions of 1 mark each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |
|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                                           | <b>Questions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Marks</b> |
| <b>1.</b>                                                                                              | <p>Given figure shows the graph of the polynomial <math>p(x) = ax^2 + bx + c</math>, then:</p>  <p>(A) <math>a &gt; 0, c &gt; 0</math> and <math>b &gt; 0</math>                      (B) <math>a &lt; 0, b &lt; 0</math> and <math>c &lt; 0</math><br/>(C) <math>a &lt; 0, b &gt; 0</math> and <math>c &gt; 0</math>                      (D) <math>a &lt; 0, c &lt; 0</math> and <math>b &gt; 0</math></p> | <b>1</b>     |
| <b>2.</b>                                                                                              | <p>A circular tent is cylindrical to a height of 2.1m and conical above it. Its diameter is 4m and its slant height is 2.8m, then total area of the canvas required in <math>m^2</math> is:</p> <p>(A) 22                      (B) 44                      (C) 55                      (D) 308</p>                                                                                                                                                                                               | <b>1</b>     |
| <b>3.</b>                                                                                              | <p>Mode is:</p> <p>(A) middle most value                      (B) least frequent value<br/>(C) most frequent value                      (D) None</p>                                                                                                                                                                                                                                                                                                                                             | <b>1</b>     |

|     |                                                                                                                                                                                                                                                                                                                    |   |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 4.  | If four times the sum of the areas of two circular ends of a cylinder of height 8cm is equal to twice the curved surface area, then diameter of the cylinder, is:<br>(A) 2m (B) 4m (C) 6m (D) 8m                                                                                                                   | 1 |
| 5.  | <p>In the given figure, side RE, ED and DR of a <math>\triangle RED</math> touch a circle at S, K and Y respectively. If RS= 4cm, ES=3cm and DR=11cm, then the length of ED, is:</p>  <p>(A) 14cm (B) 11cm (C) 10cm (D) 18cm</p> | 1 |
| 6.  | $\frac{1}{\cot\theta(\sec\theta-1)} + \frac{\tan\theta}{\sec\theta+1}$ is equal to:<br>(A) $2\operatorname{cosec}\theta$ (B) $2\tan\theta\sec\theta$ (C) $2\tan\theta$ (D) $2\sec\theta$                                                                                                                           | 1 |
| 7.  | If the quadratic equation $x^2-bx+1=0$ does not possess any real root, then:<br>(A) $b>2$ (B) $-2<b<2$ (C) $b<-2$ (D) $b=2$                                                                                                                                                                                        | 1 |
| 8.  | The coordinates of the fourth vertex of the parallelogram formed by the points (2,3), (12,3) and (12,9) are:<br>(A) (9,2) (B) (3,12) (C) (9,12) (D) (2,9)                                                                                                                                                          | 1 |
| 9.  | If the nth term of an A.P is $2n+1$ , then the sum of first n terms of the A.P is:<br>(A) $n(n-1)$ (B) $n(n-2)$ (C) $n(n+2)$ (D) $n(n+1)$                                                                                                                                                                          | 1 |
| 10. | The mid value or class marks of class intervals are used to calculate:<br>(A) Median (B) Mean (C) Mode (D) Range                                                                                                                                                                                                   | 1 |
| 11. | A bag contains marble, 4 reds marble and 3 white marble. If a marble is selected randomly, then the probability that it is a black or red marble, is:<br>(A) $\frac{3}{4}$ (B) $\frac{2}{3}$ (C) $\frac{1}{3}$ (D) $\frac{1}{4}$                                                                                   | 1 |
| 12. | If $\sin\alpha+\sin^2\alpha=1$ , then $\cos^2\alpha+\cos^4\alpha=$<br>(A) 2 (B) -1 (C) 1 (D) 0                                                                                                                                                                                                                     | 1 |

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 13. | <p>In the figure, If TR and TY are tangents drawn from an external point T to a circle with center O, such that <math>\triangle TRY</math> is an equilateral triangle, then <math>\angle ORY</math> is equal to:</p>  <p>(A) <math>20^\circ</math>                      (B) <math>30^\circ</math>                      (C) <math>45^\circ</math>                      (D) <math>60^\circ</math></p>                                                                                       | 1 |
| 14. | <p>Centroid of a triangle formed by (7,p),(q,-6) and (9,10) is (6,3), then the value of (p+q) is:</p> <p>(A) 4                      (B) 5                      (C) 6                      (D) 7</p>                                                                                                                                                                                                                                                                                                                                                                         | 1 |
| 15. | <p>If <math>\alpha</math> and <math>\beta</math> are the zeroes of the quadratic polynomial <math>p(x) = ax^2 + bx + c</math>; <math>a \neq 0</math>, then the value of <math>\frac{1}{\alpha^2} + \frac{1}{\beta^2}</math>, is equal to:</p> <p>(A) <math>\frac{b^2 - 2ac}{c^2}</math>                      (B) <math>\frac{b^2 + 2ac}{a^2}</math>                      (C) <math>\frac{b^2 + 2ac}{c^2}</math>                      (D) <math>\frac{b^2 - 2ac}{a^2}</math></p>                                                                                             | 1 |
| 16. | <p>If the system of equations: <math>2x + 3y = 7</math> and <math>(a+b)x + (2a-b)y = 21</math> has infinitely many solutions, then:</p> <p>(A) <math>a=1, b=5</math>                      (B) <math>a=5, b=1</math>                      (C) <math>a=5, b=-1</math>                      (D) <math>a=-1, b=5</math></p>                                                                                                                                                                                                                                                     | 1 |
| 17. | <p>The probability of guessing the correct answer to certain text questions is <math>\frac{x}{12}</math>. If the probability of not guessing the correct answer to this text question is <math>\frac{3}{4}</math>, then the value of x is:</p> <p>(A) 1                      (B) 2                      (C) 3                      (D) 4</p>                                                                                                                                                                                                                                | 1 |
| 18. | <p>The point which lies on the perpendicular bisector of the line segment joining the points P(3,7) and Q(-3,-7) is :</p> <p>(A) (3,0)                      (B) (0,3)                      (C) (0,-3)                      (D) (0,0)</p>                                                                                                                                                                                                                                                                                                                                    | 1 |
|     | <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.<br/> <b>Choose the correct option:</b></p> <p>(A) Both Assertion (A) and Reason (R) are true and Reason® is the correct explanation of the Assertion(A).<br/>         (B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion(A).<br/>         (C) Assertion (A) is true, but Reason (R) is false.<br/>         (D) Assertion (A) is false, but Reason (R) is true.</p> |   |

|     |                                                                                                                                                                                                           |   |
|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 19. | <b>Assertion(A):</b> If the circumference of two circles are in the ratio of 3:4, then ratio of their areas is 9:16.<br><b>Reason(R):</b> Area of the circle of radius r unit is $\pi r^2$ sq. units.     | 1 |
| 20. | <b>Assertion(A):</b> HCF of two numbers is 25 and their product is 56250. Their LCM is 2280.<br><b>Reason(R):</b> If a and b are two positive integers, the $a \times b = \text{HCF} \times \text{LCM}$ . | 1 |

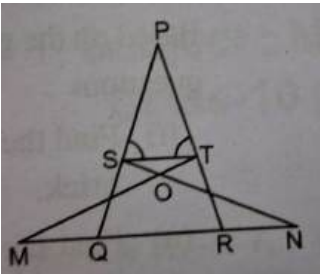
**(Section – B)**

**Section B consists of 5 questions of 2 marks each.**

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 21.(A) | Check Whether $14^n$ can end with the digit zero for any natural number n.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| (B)    | Find the HCF and LCM of 192, 180 and 144 by prime factorization method.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |
| 22.    | Find the point on the x-axis which are at a distance of $2\sqrt{5}$ units from the point (7, -4). How many such points are there?                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2 |
| 23.    | Prove that: $\frac{\sin^3 \theta + \cos^3 \theta}{\sin \theta + \cos \theta} + \frac{\sin^3 \theta - \cos^3 \theta}{\sin \theta - \cos \theta} = 2$                                                                                                                                                                                                                                                                                                                                                                                                                                  | 2 |
| 24.    | A bag contain 18 balls out of which x balls are red.<br>(A) (i) If one ball is drawn at random from the bag, then find the probability that it is red.<br>(ii) If two more red balls are put in the bag, the probability of drawing a red ball will be $\frac{9}{8}$ times that of probability of red ball coming in part(i) find the value of x.<br><br>(B) <b>OR</b><br>(B) A number x is selected at random from the numbers 1, 2, 3 and 4. Another number y is selected at random from the numbers 1, 4, 9 and 16. Find the probability that product of x and y is less than 16. | 2 |
| 25.    | Find the coordinates of the fourth vertex of a parallelogram if the three vertices are (a+b, a-b), (2a+b, 2a-b) and (a-b, a+b) in order.                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2 |

**(Section – C)**

**Section C consists of 6 questions of 3 marks each.**

|            |                                                                                                                                                                                                                                                   |   |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 26.<br>(A) | In the given figure, if $\angle PST = \angle PTS$ and $\triangle QSN \cong \triangle RTM$ . Prove that $\triangle PTS$ is similar to $\triangle PRQ$ .<br><br> | 3 |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|





|                                                                                                    | PB  OC  QD.<br>Prove that: $DQ+BP=PQ$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |         |         |         |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|-------|-----------------|----|----|-----|----|-----|----|----|-----|----------------|--------|---------|---------|---------|---------|---------|-----------------|---|----|----|----|----|---|---|
| 33.<br>(A)                                                                                         | Points P and Q are 90 km apart each other on a straight highway. A car starts from P and another car from Q at the same time. If they go in opposite directions they meet in 9 hours and if they go in opposite directions they meet in $\frac{9}{7}$ hours. Find their speeds.<br><br><b>OR</b><br>(B) Five years hence, father's age will be three times the age of his son. Five years ago, father was seven times as old as his son. Find their present ages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5       |         |         |         |         |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| 34.<br>(A)                                                                                         | If the median of the following frequency distribution is 46, find the missing frequencies.<br><table border="1"><thead><tr><th>Marks</th><th>10 – 20</th><th>20 – 30</th><th>30 – 40</th><th>40 – 50</th><th>50 – 60</th><th>60 – 70</th><th>70 – 80</th><th>Total</th></tr></thead><tbody><tr><th>No. of Students</th><td>12</td><td>30</td><td><math>x</math></td><td>65</td><td><math>y</math></td><td>25</td><td>18</td><td>229</td></tr></tbody></table><br><b>OR</b><br>(B) The following table shows the ages of the patients admitted in a hospital during a year;<br><table border="1"><thead><tr><th>Age (in years)</th><th>5 – 15</th><th>15 – 25</th><th>25 – 35</th><th>35 – 45</th><th>45 – 55</th><th>55 – 65</th></tr></thead><tbody><tr><th>No. of Patients</th><td>6</td><td>11</td><td>21</td><td>23</td><td>14</td><td>5</td></tr></tbody></table><br>Find the mode and the mean of the data given above. Compare and interpret the two measures of central tendency. | Marks   | 10 – 20 | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70 – 80 | Total | No. of Students | 12 | 30 | $x$ | 65 | $y$ | 25 | 18 | 229 | Age (in years) | 5 – 15 | 15 – 25 | 25 – 35 | 35 – 45 | 45 – 55 | 55 – 65 | No. of Patients | 6 | 11 | 21 | 23 | 14 | 5 | 5 |
| Marks                                                                                              | 10 – 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 20 – 30 | 30 – 40 | 40 – 50 | 50 – 60 | 60 – 70 | 70 – 80 | Total   |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| No. of Students                                                                                    | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 30      | $x$     | 65      | $y$     | 25      | 18      | 229     |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| Age (in years)                                                                                     | 5 – 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 15 – 25 | 25 – 35 | 35 – 45 | 45 – 55 | 55 – 65 |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| No. of Patients                                                                                    | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 11      | 21      | 23      | 14      | 5       |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| 35.<br>(A)                                                                                         | The median of the following data is 525. Find the value of $x$ and $y$ if the total frequency is 100<br><br><b>OR</b><br>(B) If the mean of the following distribution is 27, find the value of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5       |         |         |         |         |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| <b>(Section – E)</b><br><b>Section E consists of 3 case study-based questions of 4 marks each.</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |         |         |         |         |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |
| 36.                                                                                                | India is competitive manufacturing location due to the cost of manpower and strong technical and engineering capabilities contribution to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6 <sup>th</sup> year and 22600 in 9 <sup>th</sup> year.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |         |         |         |         |         |         |         |       |                 |    |    |     |    |     |    |    |     |                |        |         |         |         |         |         |                 |   |    |    |    |    |   |   |

1



1  
2  
2

Based on the information given above, answer the following questions:

- (i) Find the production during 8<sup>th</sup> year.
- (ii) Find the production during first 3 years.
- (iii) (a) In which year, the production is 29200?

**OR**

- (b) According to given information, find the production of TV sets during first year.

1. By joining A to B, B to C, C to D, and D to A, the figure formed is not a \_\_\_\_\_
2. The distance between the mid points of AC and BD is \_\_\_\_\_
3. Area of  $\triangle ABC$  is \_\_\_\_\_
- OR**
4. Perimeter of quadrilateral ABCD is \_\_\_\_\_

- 37.** Talveer's mother bought an ice-cream brick, empty cones and metal scoop to pour the ice cream into cones for all the family members. Dimensions of the ice cream brick are 30cm × 25cm × 10cm, radius of hemi-spherical scoop is  $\frac{7}{2}$  cm, radius and height of empty cone are respectively  $\frac{7}{2}$  cm and 15cm.



Based on the above given information, answer the following questions:

- I. Find the quantity of the ice cream in the whole brick.
- II. Find the volume of the empty cone.
- III. (a) Find the minimum number of scoops required to fill cone up to the brim

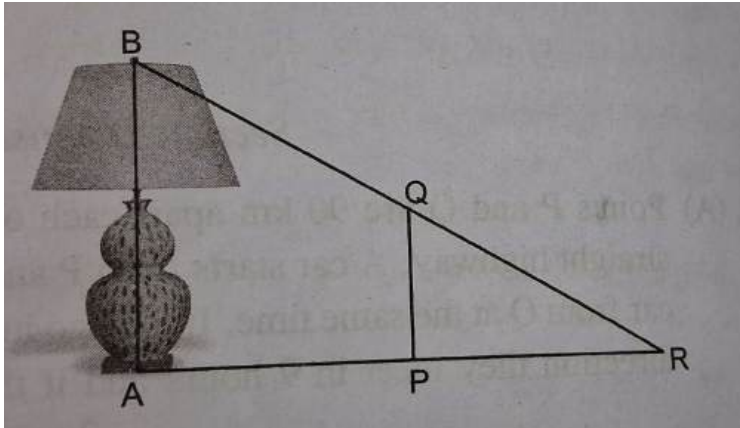
**OR**

- (b) Find the number of cones that can be filled up to the brim using the whole brick.

1  
1  
2  
2

38.

Ankur, class 10 student of height 90cm is walking away from the base of a lamp post at a speed of 1.2m/sec and reach at point P after 4 seconds. It is given that the height of the lamp post is 3.6m.



Based on the above given information, answer the following questions:

(i) Find the distance of the boy at P from the lamp post.

(ii) Is  $\triangle ABR$  similar to  $\triangle PQR$ , give reasons.

(iii) (a) Find PR and write the similarity criteria used to find PR.

**OR**

(b) Find the length AR and write the similarity criteria used to find AR.

1

1

2

# Preksha

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**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 3  
CLASS – X (2025-26)**

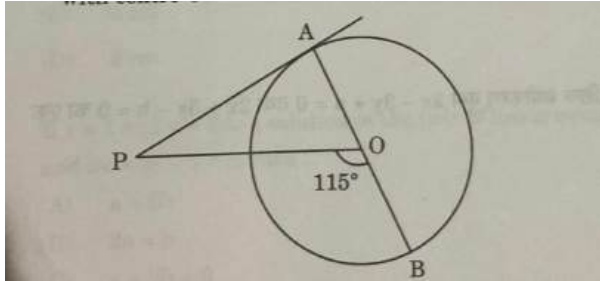
**Maximum Marks: 80**

**Time: 3 hours**

**General Instructions:**

Read the following instructions carefully and follow them:

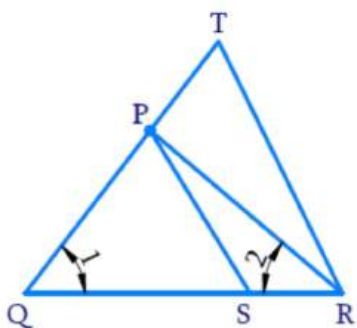
1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                                                                                                                                                                 |              |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                                                                                                                                                                | <b>Marks</b> |
| <b>1.</b>                                                                       | The given quadratic equation $3x^2 + \sqrt{7}x + 2 = 0$ has<br><br>(a) two equal real roots    (b) two distinct real roots<br>(c) more than two real roots    (d) no real roots                                                                                                                                 | <b>1</b>     |
| <b>2.</b>                                                                       | In the given figure, PA is a tangent from an external point P to a circle with centre O. If $\angle POB = 115^\circ$ , then $\angle APO$ is equal to:<br><br><br>(a) $25^\circ$ (b) $65^\circ$ (c) $90^\circ$ (d) $35^\circ$ | <b>1</b>     |



|     |                                                                                                                                                                                                                                       |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 3.  | Which of the following cannot be the probability of any event?<br><br>(a) $\frac{5}{4}$ (b) 0.25 (c) $\frac{1}{33}$ (d) 66%                                                                                                           | 1 |
| 4.  | A piece of wire 20cm long is bent into the form of an arc of a circle of radius $\frac{60}{\pi}$ cm. The angle subtended by the arc at the centre of the circle is<br><br>(a) $30^\circ$ (b) $60^\circ$ (c) $90^\circ$ (d) $50^\circ$ | 1 |
| 5.  | Three number in A.P have the sum 30. What is its middle term?<br><br>(a) 4 (b) 10 (c) 16 (d) 8                                                                                                                                        | 1 |
| 6.  | An arc of a circle is of length $5\pi$ cm and the sector it bounds has an area of $20\pi\text{cm}^2$ . Its radius is:<br><br>(a) 10cm (b) 1cm (c) 5cm (d) 8cm                                                                         | 1 |
| 7.  | If $x=1$ and $y=2$ is a solution of the pair of linear equations $2x-3y+a=0$ and $2x+3y-b=0$ , then:<br><br>(a) $a=2b$ (b) $2a=b$ (c) $a+2b=0$ (d) $2a+b=0$                                                                           | 1 |
| 8.  | If $\alpha$ and $\beta$ are the zeroes of polynomial $3x^2+6x+k$ such that $\alpha+\beta+\alpha\beta=\frac{-2}{3}$ , then the value of k is:<br><br>(a) -8 (b) 8 (c) -4 (d) 4                                                         | 1 |
| 9.  | The value of $\tan^2\theta - (\frac{1}{\cos\theta} \times \sec\theta)$ is:<br><br>(a) 1 (b) 0 (c) -1 (d) 2                                                                                                                            | 1 |
| 10. | Which of the following is a rational number between $\sqrt{3}$ and $\sqrt{5}$ ?<br><br>(a) 1.4142387954012..... (b) $2.32\bar{6}$ (c) $\pi$<br>(d) 1.857142                                                                           | 1 |
| 11. | If $\text{HCF}(98,28)=m$ and $\text{LCM}(98,28)=n$ , then the value of $n-7m$ is:<br><br>(a) 0 (b) 28 (c) 98 (d) 198                                                                                                                  | 1 |
| 12. | If the length of a chord of a circle is equal to its radius, then the angle subtended by chord at the center is:<br><br>(a) $60^\circ$ (b) $30^\circ$ (c) $120^\circ$ (d) $90^\circ$                                                  | 1 |
| 13. | The greatest number which divides 70 and 125, leaving remainders 5 and 8 respectively is:<br><br>(a) 13 (b) 65 (c) 875 (d) 1750                                                                                                       | 1 |

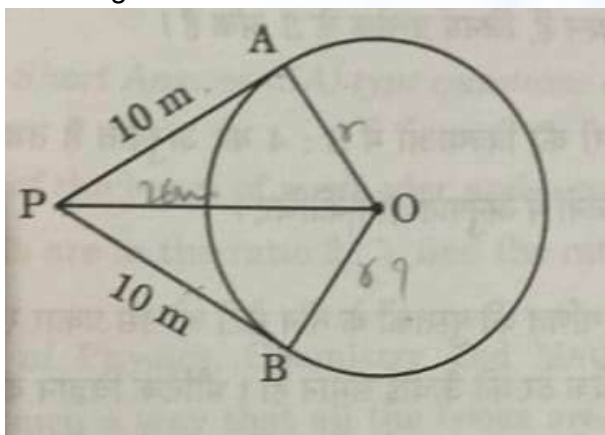
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                   |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | A ladder 14m long leans against a wall. If the foot of the ladder is 7m from the wall, then the angle of elevation of the top of the wall is:<br><br>(a) $15^\circ$ (b) $30^\circ$ (c) $45^\circ$ (d) $60^\circ$                                                                                  | 1 |
| 15.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | In triangles ABC and DEF, $\angle B = \angle E$ , $\angle F = \angle C$ and $AB = 3DE$ . Then the two triangles are:<br>(a) congruent but not similar (b) congruent as well as similar<br>(c) neither congruent nor similar (d) similar but not congruent                                         | 1 |
| 16.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The mid point of the line segment joining the points P(-4,5) and Q(4,6) lies on:<br>(a) x-axis (b) y-axis (c) origin (d) neither x-axis nor y-axis                                                                                                                                                | 1 |
| 17.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Mode and Mean of a data are $15x$ and $18x$ , respectively. Then the median of the data is:<br>(a) $x$ (b) $11x$ (c) $17x$ (d) $34x$                                                                                                                                                              | 1 |
| 18.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | The point which lies on the perpendicular bisector of the line segment joining the points P(3,7) and Q(-3,-7) is :<br>(a) (3,0) (b) (0,3) (c) (0,-3) (d) (0,0)                                                                                                                                    | 1 |
| <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)<br/>         (B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)<br/>         (C) Assertion (A) is true but reason (R) is false.<br/>         (D) Assertion (A) is false but reason (R) is true.</p> |                                                                                                                                                                                                                                                                                                   |   |
| 19.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Assertion(A):</b> If we join two hemisphere of same radius along their bases, then we get a sphere.<br><b>Reason(R):</b> Total surface area of a sphere of radius $r$ is $3\pi r^2$                                                                                                            | 1 |
| 20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Assertion(A):</b> The probability of selecting a number at random from the number 1 to 20 is 1.<br><b>Reason(R):</b> For any event E, if $P(E)=1$ , then E is called a sure event.                                                                                                             | 1 |
| <p align="center"><b>(Section – B)</b></p> <p align="center"><b>Section B consists of 5 questions of 2 marks each.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                   |   |
| 21.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | If $\triangle ABC \sim \triangle PQR$ in which $AB=6\text{cm}$ , $BC=4\text{cm}$ , $AC=6\text{cm}$ , then find the length of (PQ+QR).<br><br><b>OR</b><br><br>(b) In the given figure, $\frac{QR}{QS} = \frac{QT}{PR}$ and $\angle 1 = \angle 2$ , show that $\triangle PQS \sim \triangle TQR$ . | 2 |



22. If the zeroes of the polynomial  $x^2+ax+b$  are in the ratio 3:4, then prove that  $12a^2=49b$ .

2

23. A person is standing at P outside a circular ground at a distance of 26m from the center of the ground. He found that his distance from the points A and B on the ground are 10m (PA and PB are tangents to the circle). Find the radius of the circular ground.



24. (a) If  $x\cos 60^\circ + y\cos 0^\circ + \sin 30^\circ - \cot 45^\circ = 5$ , then find the value of  $x+2y$ .

2

OR

- (b) Evaluate:  $\frac{\tan^2 60^\circ}{\sin^2 60^\circ + \cos^2 30^\circ}$

25. Find the coordinates of the centers of a circle are  $(2a, a-7)$ . Find the value of 'a' if the circle passes through the point  $(11, -9)$  and has diameter  $10\sqrt{2}$  units.  $(-4, 2)$ .

2

### (Section – C)

Section C consists of 6 questions of 3 marks each.

26. (a) Prove that;  $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \operatorname{cosec} \theta$

3

OR

- (b) (b) Prove that:  $\frac{\sin A + \cos A}{\sin A - \cos A} + \frac{\sin A - \cos A}{\sin A + \cos A} = \frac{2}{2\sin^2 A - 1}$

|                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                              |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 27.<br>(a)                                                                                                                                          | <p>In the given figure, O is the centre and BCD is tangent to it at C. Prove that <math>\angle BAC + \angle ACD = 90^\circ</math>.</p> <div></div>                                                                                                                                                                                                                                                                           | 3 |
| (b)                                                                                                                                                 | <p style="text-align: center;"><b>OR</b></p> <p>Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the center of the circle.</p>                                                                                                                                                                                                                                           |   |
| 28.                                                                                                                                                 | Find the ratio in which the y-axis divides the line segment joining the points (5,-6) and (-1,-4). Also find the point of intersection.                                                                                                                                                                                                                                                                                      | 3 |
| 29.                                                                                                                                                 | If the radii of the bases of a cylinder and a cone are in the ratio 3:4 and their heights are in the ratio 2:3, find the ratio of their volumes.                                                                                                                                                                                                                                                                             | 3 |
| 30.                                                                                                                                                 | Three sets of physics, chemistry and mathematics books have to be stacked in such a way that all the books are stored subject-wise and the height of each stack is the same. The number of physics books is 144, the number of chemistry books is 180 and the number of mathematics books is 192. Assuming that the books are of same thickness, determine the number of stacks of physics, chemistry and mathematics books. | 3 |
| 31.                                                                                                                                                 | Two dice are thrown at the same time. Determine the probability that the difference of the numbers on the two dice is 2.                                                                                                                                                                                                                                                                                                     | 3 |
| <p style="text-align: center;"><b>(Section – D)</b></p> <p style="text-align: center;"><b>Section D consists of 4 questions of 5 marks each</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                              |   |
| 32.                                                                                                                                                 | The following frequency distribution gives the monthly consumption of electricity of 68 consumers of a locality. Find the mean and mode of the data:                                                                                                                                                                                                                                                                         | 5 |

| <i>Monthly Consumption<br/>(in units)</i> | <i>Number of<br/>Consumers</i> |
|-------------------------------------------|--------------------------------|
| 65 – 85                                   | 4                              |
| 85 – 105                                  | 5                              |
| 105 – 125                                 | 13                             |
| 125 – 145                                 | 20                             |
| 145 – 165                                 | 14                             |
| 165 – 185                                 | 8                              |
| 185 – 205                                 | 4                              |

- 33.** Ranjeeta and pinky have number of mangoes , Ranjeeta says to pinky, “If you give me 10 of your mangoes, I will have twice as many as left with you”. Pinky replies, “If you give me 10 of your mangoes, I will have thrice the number of mangoes as left with you”. Find the original number of mangoes each had.

**5**

**OR**

- (b)** The sum of a two-digit number and the number obtained by reversing the digit is 55. If the digits of the number differ by 3, find the number. How many such numbers are there?

- 34.** The following frequency distribution gives the monthly consumption of electricity in a locality of 80 families. If the median is 206, find the missing frequencies  $x$  and  $y$ .

**5**

| <i>Monthly Consumption<br/>of Electricity (in units)</i> | <i>Number of Families</i> |
|----------------------------------------------------------|---------------------------|
| 170 – 180                                                | 4                         |
| 180 – 190                                                | $x$                       |
| 190 – 200                                                | 12                        |
| 200 – 210                                                | 15                        |
| 210 – 220                                                | 13                        |
| 220 – 230                                                | $y$                       |
| 230 – 240                                                | 14                        |
| 240 – 250                                                | 6                         |

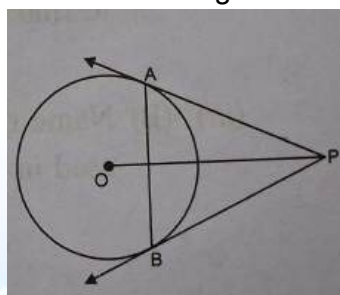
**OR**

- (b)** Weekly income of 600 families is tabulated below:



| Weekly income (in ₹) | Number of Families |
|----------------------|--------------------|
| 0 – 1000             | 250                |
| 1000 – 2000          | 190                |
| 2000 – 3000          | 100                |
| 3000 – 4000          | 40                 |
| 4000 – 5000          | 15                 |
| 5000 – 6000          | 5                  |
| <b>Total</b>         | <b>600</b>         |

- 35.** In the given figure, PA and PB are two tangents drawn from an external point P to a circle with center O. Prove that OP is the right bisector of line segment AB.



**5**

### (Section – E)

**Section E consists of 3 case study-based questions of 4 marks each.**

- 36.** Harjinder was playing a number card game. In the game, some number cards having both positive or negative numbers are arranged in a row such that they are forming an A.P. On his first turn, Harjinder picks up 5<sup>th</sup> and 12<sup>th</sup> card and finds their sum to be -61. On the second turn he picks up 9<sup>th</sup> and 18<sup>th</sup> card and finds their sum to be -110.

Based on the information given above, answer the following questions:

- (i) Write the difference between the numbers on any two consecutive cards.
- (ii) Write the number on first card.
- (iii) (a) Find the sum of numbers on the first fifteen cards.

**OR**

- (b) Find the number on the 23<sup>rd</sup> card.

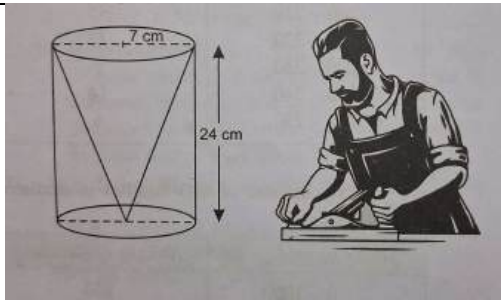
**1**

**1**

**2**

**2**

- 37.** One day Amit was going to home from school. In the way, he saw a carpenter working on wood. He found that he is carving out a cone from a cylinder with same height and same diameter. The height of the cylinder was 24 cm and base radius was 7cm. While watching this, some questions came into Amit's mind. Help Amit to find the answer of the following questions.



Based on the above given information, answer the following questions:

- (i) Find the slant height of conical cavity.
- (ii) Find the curved surface area of the conical cavity.
- (iii) (a) Find the volume of the wood left after carving out the required conical cavity.

**OR**

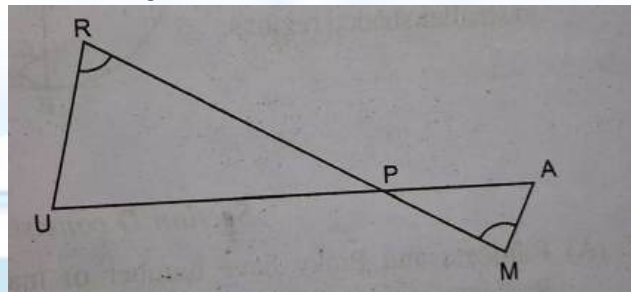
- (b) Find the external curved surface area of the cylinder.

1  
1  
2

**2**

**38.**

Puru was very excited to receive a fancy jumbo pencil from his friend Rupam. Puru's father engage Puru and Rupam in an activity of drawing triangles and measure the lengths of triangle with ruler.



Starting from P, Puru draw lengths PR= 12cm and PU= 15cm. RU= 6cm in the left side of P while Rupam draw Length PM= 4cm and made  $\angle M = \angle R$ .

Based on the above given information, answer the following questions:

- (i) Find the length of PA.  
(ii) Find the length of AM.  
(iii) (a) Is  $\Delta RUP \sim \Delta MAP$ , which criteria is used to find the above lengths?

**OR**

- (b) Name the similarity criteria other than used in the given triangles.

1  
1  
2

**2**



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**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 4  
CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

**General Instructions:**

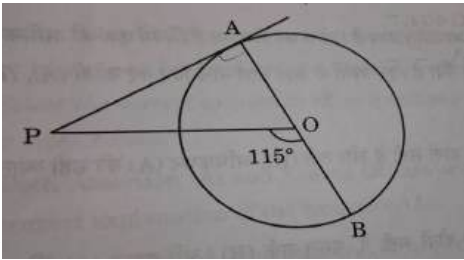
Read the following instructions carefully and follow them:

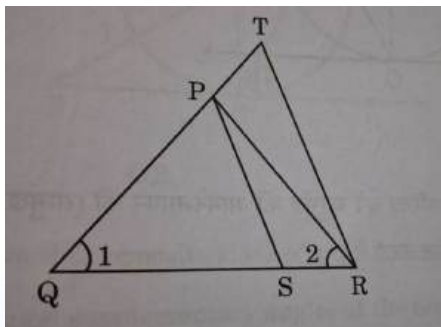
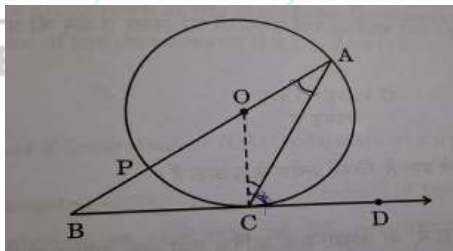
1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                           |              |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                          | <b>Marks</b> |
| <b>1.</b>                                                                       | If $\alpha$ and $\beta$ are the zeroes of polynomial $3x^2+6x+k$ such that $\alpha+\beta+\alpha\beta=\frac{-2}{3}$ , then the value of k is:<br>(A) -8 (B) 8 (C) -4 (D) 4 | <b>1</b>     |
| <b>2.</b>                                                                       | If $x=1$ and $y=2$ is a solution of the pair of linear equations $2x-3y+a=0$ and $2x+3y-b=0$ , then:<br>(A) $a=2b$ (B) $2a=b$ (C) $a+2b=0$ (D) $2a+b=0$                   | <b>1</b>     |
| <b>3.</b>                                                                       | The mid-point of the line segment joining the points P(-4,5) and Q(4,6) lies on:<br>(A) x-axis (B) y-axis<br>(C) origin (D) neither x-axis nor y-axis                     | <b>1</b>     |
| <b>4.</b>                                                                       | If $\theta$ is an acute angle and $7+4\sin\theta=9$ , then the value of $\theta$ is:<br>(A) $90^\circ$ (B) $30^\circ$ (C) $45^\circ$ (D) $60^\circ$                       | <b>1</b>     |
| <b>5.</b>                                                                       | The value of $\tan^2\theta - (\frac{1}{\cos\theta} \times \sec\theta)$ is:<br>(A) 1 (B) 0 (C) -1 (D) 2                                                                    | <b>1</b>     |



|     |                                                                                                                                                                                                                                                            |   |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 6.  | If $HCF(98,28)=m$ and $LCM(98,28)=n$ , then the value of $n-7m$ is:<br>(A) 0 (B) 28 (C) 98 (D) 198                                                                                                                                                         | 1 |
| 7.  | The tangents drawn at extremities of the diameter of a circle are always:<br>(A) parallel (B) perpendicular (C) equal (D) intersecting                                                                                                                     | 1 |
| 8.  | In triangles ABC and DEF, $\angle B = \angle E$ , $\angle F = \angle C$ and $AB = 3DE$ . Then, the two triangles are:<br>(A) congruent but not similar (B) Congruent as well as similar<br>(C) neither congruent nor similar (D) similar but not congruent | 1 |
| 9.  | If $(-1)^n + (-1)^8 = 0$ , then n is:<br>(A) any positive integer (B) any negative integer<br>(C) any odd number (D) any even number                                                                                                                       | 1 |
| 10. | Two polynomials are shown in the graph below. The number of distinct zeroes of both the polynomials is:<br><div data-bbox="652 873 1068 1182" data-label="Figure"> </div><br>(A) 3 (B) 5 (C) 2 (D) 4                                                       | 1 |
| 11. | If the sum of first m terms of an A.P is $2m^2 + 3m$ , then its second term is:<br>(A) 10 (B) 9 (C) 12 (D) 4                                                                                                                                               | 1 |
| 12. | Mode and Mean of a data are $15x$ and $18x$ , respectively. Then the median of the data is:<br>(A) x (B) $11x$ (C) $17x$ (D) $34x$                                                                                                                         | 1 |
| 13. | A card is selected at random from a deck of 52 playing cards. The probability of it being a red face card is:<br>(A) $\frac{3}{13}$ (B) $\frac{2}{13}$ (C) $\frac{1}{2}$ (D) $\frac{3}{26}$                                                                | 1 |
| 14. | Which of the following is a rational number between $\sqrt{3}$ and $\sqrt{5}$ ?<br>(A) 1.4142387954012..... (B) $2.32\bar{6}$<br>(C) $\pi$ (D) 1.857142                                                                                                    | 1 |
| 15. | If a sector of a circle has an area of $40\pi$ sq. units and a central angle of $72^\circ$ , the radius of the circle is:<br>(A) 200 units (B) 100 units (C) 20 units (D) $10\sqrt{2}$ units                                                               | 1 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 16.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>In the given figure, PA is a tangent from an external point P to a circle with centre O. If <math>\angle POB = 115^\circ</math>, then <math>\angle APO</math> is equal to:</p>  <p>(A) <math>25^\circ</math>                      (B) <math>65^\circ</math>                      (C) <math>90^\circ</math>                      (D) <math>35^\circ</math></p> | 1 |
| 17.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>A kite is flying at a height of 150m from the ground. It is attached to a string inclined at an angle of <math>30^\circ</math> to the horizontal. The length of the string is:</p> <p>(A) <math>100\sqrt{3}\text{m}</math>                      (B) 300m                      (C) <math>150\sqrt{2}\text{m}</math>                      (D) <math>150\sqrt{3}\text{m}</math></p>                                                                | 1 |
| 18.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>A piece of wire 20cm long is bent into the form of an arc of a circle of radius <math>\frac{60}{\pi}\text{cm}</math>. The angle subtended by the arc at the centre of the circle is:</p> <p>(A) <math>30^\circ</math>                      (B) <math>60^\circ</math>                      (C) <math>90^\circ</math>                      (D) <math>50^\circ</math></p>                                                                          | 1 |
| <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false.</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |
| 19.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Assertion(A):</b> The probability of selecting a number at random from the numbers 1 to 20 is 1.</p> <p><b>Reason(R):</b> For any event E, If <math>P(E)=1</math>, then E is called a sure event.</p>                                                                                                                                                                                                                                        | 1 |
| 20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>Assertion(A):</b> If we join two hemispheres of same radius along their bases, then we get a sphere.</p> <p><b>Reason(R):</b> Total surface area of a sphere of radius r is <math>3\pi r^2</math>.</p>                                                                                                                                                                                                                                       | 1 |
| <p style="text-align: center;"><b>(Section – B)</b></p> <p style="text-align: center;"><b>Section B consists of 5 questions of 2 marks each.</b></p>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |
| 21.(a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p>If <math>x \cos 60^\circ + y \cos 0^\circ + \sin 30^\circ - \cot 45^\circ = 5</math>, then find the value of <math>x+2y</math>.</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) Evaluate:- <math>\frac{\tan^2 60^\circ}{\sin^2 60^\circ + \cos^2 30^\circ}</math></p>                                                                                                                                                                   | 2 |
| 22.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>Find the zeroes of the polynomial <math>p(x) = x^2 + \frac{4}{3}x - \frac{4}{3}</math>.</p>                                                                                                                                                                                                                                                                                                                                                     | 2 |

|                                                                                      |                                                                                                                                                                                                                                                                         |   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 23.                                                                                  | The coordinates of the centre of a circle are $(2a, a-7)$ . Find the value of 'a' if the circle passes through the point $(11, -9)$ and has diameter $10\sqrt{2}$ units.                                                                                                | 2 |
| 24.<br>(a)                                                                           | If $\Delta ABC \sim \Delta PQR$ in which $AB= 6\text{cm}$ , $BC= 4\text{cm}$ , $AC= 8\text{ cm}$ and $PR= 6\text{cm}$ , then find the length of $PQ+QR$ .                                                                                                               | 2 |
| <b>OR</b>                                                                            |                                                                                                                                                                                                                                                                         |   |
| (b)                                                                                  | In the given figure, $\frac{QR}{QS} = \frac{QT}{PR}$ and $\angle 1 = \angle 2$ , show that $\Delta PQS \sim \Delta TQR$ .                                                                                                                                               |   |
|    |                                                                                                                                                                                                                                                                         |   |
| 25.                                                                                  | A person is standing at P outside a circular ground at a distance of 26 m from the centre of the ground. He found that his distances from the points A and B on the ground are 10m ( $PA$ and $PB$ are tangents to the circle). Find the radius of the circular ground. | 2 |
| <b>(Section – C)</b><br><b>Section C consists of 6 questions of 3 marks each.</b>    |                                                                                                                                                                                                                                                                         |   |
| 26.<br>(a)                                                                           | In the given figure, O is the centre of the circle and BCD is tangent to it at C. Prove that $\angle BAC + \angle ACD = 90^\circ$ .                                                                                                                                     | 3 |
|  |                                                                                                                                                                                                                                                                         |   |
| <b>OR</b>                                                                            |                                                                                                                                                                                                                                                                         |   |
| (b)                                                                                  | Prove that opposite sides of a quadrilateral circumscribing a circle subtend supplementary angles at the centre of the circle.                                                                                                                                          |   |
| 27.<br>(a)                                                                           | Prove that: $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \csc \theta$                                                                                                                                                   | 3 |
| <b>OR</b>                                                                            |                                                                                                                                                                                                                                                                         |   |
| (b)                                                                                  | Prove that: $\frac{\sin A + \cos A}{\sin A - \cos A} + \frac{\sin A - \cos A}{\sin A + \cos A} = \frac{2}{2\sin^2 A - 1}$                                                                                                                                               |   |
| 28.                                                                                  | Find the ratio in which the y-axis divides the line segment joining the points $(5, -6)$ and $(-1, -4)$ . Also find the point of intersection.                                                                                                                          | 3 |

|     |                                                                                                                                                                                                                                                                                       |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 29. | Prove that $\frac{1}{\sqrt{5}}$ is an irrational number.                                                                                                                                                                                                                              | 3 |
| 30. | A room is in the form of a cylinder surmounted by a hemispherical dome. The base radius of the hemisphere is half of the height of the cylindrical part. If the room contains $\frac{1408}{21}\text{m}^3$ of air, find the height of the cylindrical part. (use $\pi=\frac{22}{7}$ ). | 3 |
| 31. | Two dice are thrown at the same time. Determine the probability that the difference of the numbers on the two dice is 2.                                                                                                                                                              | 3 |

**(Section – D)**

**Section D consists of 4 questions of 5 marks each**

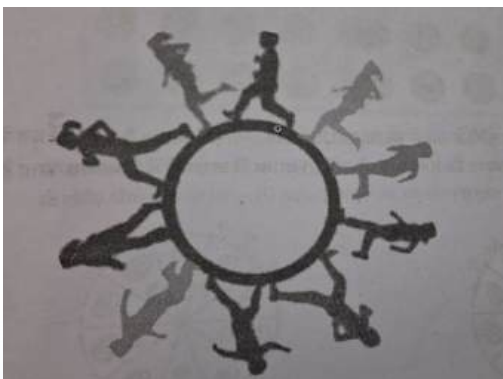
|            |                                                                                                                                                                                                                                                                                                                                                                                       |   |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 32.        | Vijay invested certain amounts of money in two schemes A and B , which offer interest at the rate of 8% per annum and 9% per annum, respectively. He received Rs. 1860 as the total annual interest. However , had he interchanged the amounts of investments in the two schemes, he would have received Rs. 20 more as annual interest. How much money did he invest in each scheme? | 5 |
| 33.<br>(a) | The diagonal BD of a parallelogram ABCD intersects the line segment AE at the point F, where E is any point on the side BC. Prove that $DF \times EF = FB \times FA$ .                                                                                                                                                                                                                | 5 |
|            | <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                             |   |
| (b)        | In $\triangle ABC$ , if $AD \perp BC$ and $AD^2 = BD \times DC$ , then prove that $\angle BAC = 90^\circ$                                                                                                                                                                                                                                                                             |   |
| 34.        | The perimeter of a right triangle is 60 cm and its hypotenuse is 25 cm. Find the lengths of other two sides of the triangle.                                                                                                                                                                                                                                                          | 5 |
|            | <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                             |   |
|            | A train travels a distance of 480 km at a uniform speed. If the speed had been 8 km/h less, then it would have taken 3 hours more to cover the same distance. Find the speed of the train.                                                                                                                                                                                            |   |
| 35.        | Find the missing frequency 'f' in the following table, if the mean of the given data is 18. Hence find the mode.                                                                                                                                                                                                                                                                      | 5 |

| Daily Allowance | Number of Children |
|-----------------|--------------------|
| 11 – 13         | 7                  |
| 13 – 15         | 6                  |
| 15 – 17         | 9                  |
| 17 – 19         | 13                 |
| 19 – 21         | f                  |
| 21 – 23         | 5                  |
| 23 – 25         | 4                  |

(Section – E)

Section E consists of 3 case study-based questions of 4 marks each.

36. A school is organizing a charity run to raise funds for a local hospital. The run is planned as a series of rounds around a track, with each round being 300 metres. To make the event more challenging and engaging, the organizers decide to increase the distance of each subsequent round by 50 metres. For example, the second round will be 350 metres, the third round will be 400 metres and so on. The total number of rounds planned is 10.



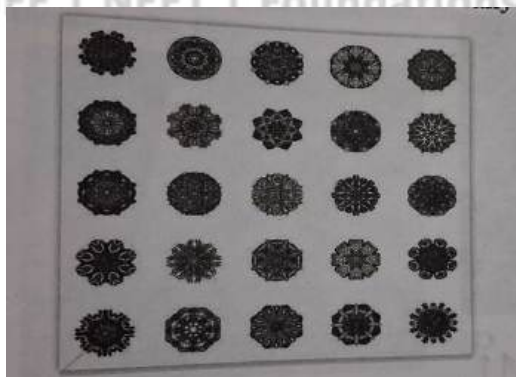
Based on the information given above, answer the following questions:

- (i) Write the fourth, fifth and sixth term of the Arithmetic progression so formed.  
(ii) Determine the distance of the 8<sup>th</sup> round.  
(iii) (a) Find the total distance run after completing all 10 rounds.

OR

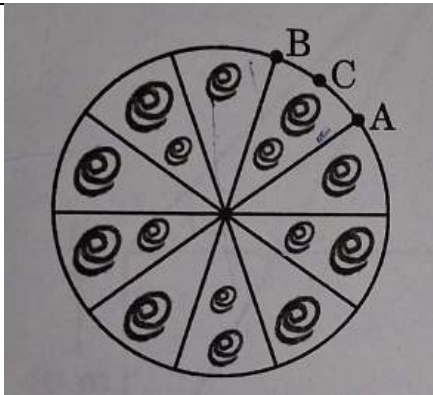
- (b) If a runner completes only the first 6 rounds, what is the total distance run by the runner?

37. A brooch is a decorative piece often worn on clothing like jackets, blouses or dresses to add elegance. Made from precious metals and decorated with gemstones, brooches come in many shapes and designs.



One such brooch is made with silver wire in the form of a circle with diameter 35mm. The wire is also used in making 5 diameters which divide the circle into 10 equal sectors as shown in the figure.





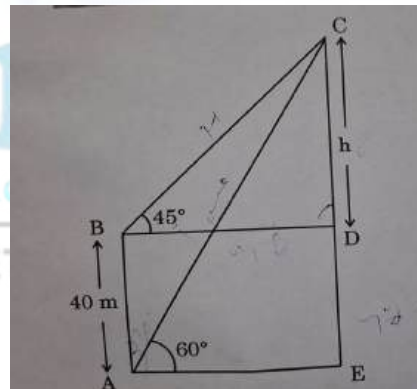
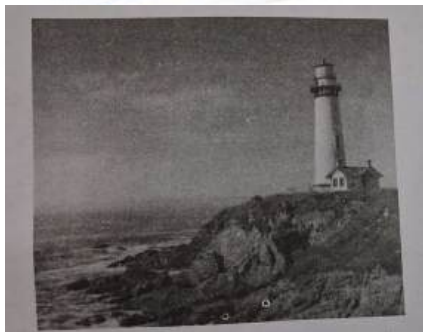
Based on the above given information, answer the following questions:

- (i) Find the central angle of each sector.
- (ii) Find the length of the arc ACB.
- (iii) (a) Find the area of each sector of the brooch.

**OR**

- (b) Find the total length of the silver wire used.

- 38.** Amrita stood near the base of a lighthouse, gazing up at its towering height. She measured the angle of elevation to the top and found it to be  $60^\circ$ . Then, she climbed a nearby observation deck, 40 metres higher than her original position and noticed the angle of elevation to the top of lighthouse to be  $45^\circ$ .



Based on the above given information, answer the following questions:

- (i) If CD is  $h$  metres, find the distance BD in term of ' $h$ '.
- (ii) Find distance BC in term of ' $h$ '.
- (iii) (a) Find the length CE of the lighthouse [Use  $\sqrt{3}=1.73$ ]

**OR**

- (b) Find distance AE, if AC=100m.

1  
1  
2  
  
2

**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 5  
CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

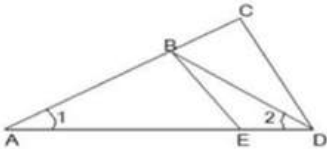
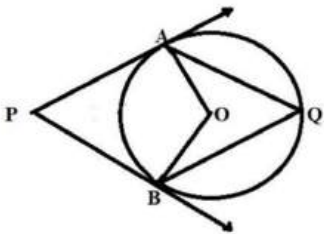
**General Instructions:**

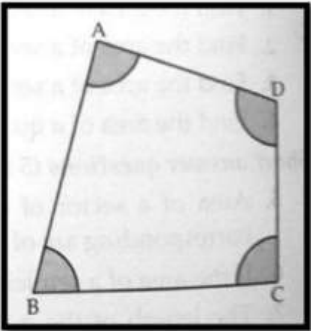
Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                                                                           |              |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                                                                          | <b>Marks</b> |
| <b>1.</b>                                                                       | Let a and b be two positive integers such that $a = p^3q^4$ and $b = p^2q^3$ , where p and q are prime numbers. If $HCF(a, b) = p^2q^3$ and $LCM(a, b) = p^3q^4$ , then $(m + n)(r + s) =$<br>(A) 15 (B) 30 (C) 35 (D) 72 | <b>1</b>     |
| <b>2.</b>                                                                       | Let p be a prime number. The quadratic equation having its roots as factors of p is<br>(A) $x^2 - px + p = 0$ (B) $x^2 - (p + 1)x + p = 0$<br>(C) $x^2 + (p + 1)x + p = 0$ (D) $x^2 - px + p + 1 = 0$                     | <b>1</b>     |
| <b>3.</b>                                                                       | If $\alpha$ and $\beta$ are the zeros of a polynomial $f(x) = px^2 - 2x + 3p$ and $\alpha + \beta = \alpha\beta$ , then p is<br>(A) $-2/3$ (B) $2/3$ (C) $1/3$ (D) $-1/3$                                                 | <b>1</b>     |
| <b>4.</b>                                                                       | If the system of equations $3x + y = 1$ and $(2k - 1)x + (k - 1)y = 2k + 1$ is inconsistent, then k =<br>(A) $(-2, -1)$ (B) $(-2, -3)$ (C) $(2, -1)$ (D) $(1, 2)$                                                         | <b>1</b>     |
| <b>5.</b>                                                                       | If the vertices of a parallelogram PQRS taken in order are $P(3, 4)$ , $Q(-2, 3)$ and $R(-3, -2)$ , then the coordinates of its fourth vertex S are<br>(A) 1 (B) 0 (C) -1 (D) 2                                           | <b>1</b>     |

|     |                                                                                                                                                                                                                                                                |   |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 6.  | $\Delta ABC \sim \Delta PQR$ . If AM and PN are altitudes of $\Delta ABC$ and $\Delta PQR$ respectively and $AB^2 : PQ^2 = 4 : 9$ , then $AM : PN =$<br>(A) 3:2 (B) 16:81 (C) 4:9 (D) 2:3                                                                      | 1 |
| 7.  | If $x \tan 60^\circ \cos 60^\circ = \sin 60^\circ \cot 60^\circ$ , then $x =$<br>(A) $\cos 30^\circ$ (B) $\tan 30^\circ$ (C) $\sin 30^\circ$ (D) $\cot 30^\circ$                                                                                               | 1 |
| 8.  | If $\sin \theta + \cos \theta = \sqrt{2}$ , then $\tan \theta + \cot \theta =$<br>(A) 1 (B) 2 (C) 3 (D) 4                                                                                                                                                      | 1 |
| 9.  | In the given figure, $DE \parallel BC$ , $AE = a$ units, $EC = b$ units, $DE = x$ units, and $BC = y$ units. Which of the following is true?<br>(A) $x = \frac{a+b}{ay}$ (B) $y = \frac{ax}{a+b}$ (C) $x = \frac{ax}{a+b}$ (D) $x = \frac{a}{b}$               | 1 |
| 10. | ABCD is a trapezium with $AD \parallel BC$ and $AD = 4$ cm. If the diagonals AC and BD intersect each other at O such that $AO/OC = DO/OB = 1/2$ , then $BC =$<br>(A) 6 cm (B) 7 cm (C) 8 cm (D) 9 cm                                                          | 1 |
| 11. | If two tangents inclined at an angle of $60^\circ$ are drawn to a circle of radius 3 cm, then the length of each tangent is equal to<br>(A) $\frac{3\sqrt{3}}{2}$ (B) 3 cm (C) 6 cm (D) $3\sqrt{3}$                                                            | 1 |
| 12. | The area of the circle that can be inscribed in a square of 6 cm is<br>(A) $36\pi \text{ cm}^2$ (B) $18\pi \text{ cm}^2$ (C) $12\pi \text{ cm}^2$ (D) $9 \text{ cm}^2$                                                                                         | 1 |
| 13. | The sum of the length, breadth, and height of a cuboid is $6\sqrt{3}$ cm and the length of its diagonal is $2\sqrt{3}$ cm. The total surface area of the cuboid is<br>(A) $48 \text{ cm}^2$ (B) $72 \text{ cm}^2$ (C) $96 \text{ cm}^2$ (D) $108 \text{ cm}^2$ | 1 |
| 14. | If the difference of Mode and Median of a data is 24, then the difference of median and mean is<br>(A) 8 (B) 12 (C) 24 (D) 36                                                                                                                                  | 1 |
| 15. | The number of revolutions made by a circular wheel of radius 0.25m in rolling a distance of 11 km is<br>(A) 2800 (B) 4000 (C) 5500 (D) 7000                                                                                                                    | 1 |
| 16. | For the following distribution,<br>Class 0-5 5-10 10-15 15-20 20-25<br>Frequency 10 15 12 20 9<br>The sum of the lower limits of the median and modal class is<br>(A) 15 (B) 25 (C) 30 (D) 35                                                                  | 1 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                     |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 17.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Two dice are rolled simultaneously. What is the probability that 6 will come up at least once ?<br>(A) 1/6 (B) 7/36 (C) 11/36 (D) 13/36                                                                                                                                                             | 1 |
| 18.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | If $5 \tan b = 4$ , then $\frac{5 \sin b - 2 \cos b}{5 \sin b + 2 \cos b} =$<br>(A) 1/3 (B) 2/5 (C) 3/5 (D) 6                                                                                                                                                                                       | 1 |
| <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false.</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |                                                                                                                                                                                                                                                                                                     |   |
| 19.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Assertion(A):</b> If product of two number is 5780 and their HCF is 17, then their LCM is 340<br><b>Reason(R):</b> HCF is always a factor of LCM                                                                                                                                                 | 1 |
| 20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Assertion(A):</b> If the co-ordinates of the mid-points of the side AB and AC of $\triangle ABC$ are D(3,5) and E(-3, -3) respectively, then BC =20 units<br><b>Reason(R):</b> The line joining the mid points of two sides of a triangle is parallel to the third side and equal to half of it. | 1 |
| <p style="text-align: center;"><b>(Section – B)</b></p> <p style="text-align: center;"><b>Section B consists of 5 questions of 2 marks each.</b></p>                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                     |   |
| 21.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | If $49x + 51y = 499$ , $51x + 49y = 501$ , then find the value of x and y                                                                                                                                                                                                                           | 2 |
| 22.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>In the given fig below, <math>\frac{AD}{AE} = \frac{AC}{BD}</math> and <math>\angle 1 = \angle 2</math>. Show that <math>\triangle BAE \cong \triangle CAD</math></p>                                         | 2 |
| 23.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p>In the given fig, O is the center of circle. Find <math>\angle AQB</math>, given that PA and PB are tangents to the circle and <math>\angle APB = 75^\circ</math></p>                                         | 2 |

|                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <p><b>24.</b><br/><b>(a)</b></p> <p>The length of the minute hand of a clock is 6 cm. find the area swept by it when it moves from 7:05 pm to 7:40 pm</p> <p style="text-align: center;"><b>OR</b></p> <p><b>(b)</b></p> | <p>In the figure, arcs have been drawn of radius 7 cm each with vertices A, B, C and D of quadrilateral ABCD as centres. Find the area of the shaded region.</p> <div style="text-align: center;">  </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>2</b></p> |
| <p><b>25.</b></p>                                                                                                                                                                                                        | <p>A person is standing at P outside a circular ground at a distance of 26 m from the centre of the ground. He found that his distances from the points A and B on the ground are 10m (PA and PB are tangents to the circle). Find the radius of the circular ground.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>2</b></p> |
| <p><b>(Section – C)</b></p> <p><b>Section C consists of 6 questions of 3 marks each.</b></p>                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |
| <p><b>26.</b></p>                                                                                                                                                                                                        | <p>Given that <math>\sqrt{3}</math> is irrational, prove that <math>5 + 2\sqrt{3}</math> is irrational.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>3</b></p> |
| <p><b>27.</b></p>                                                                                                                                                                                                        | <p>If the zeroes of the polynomial <math>x^2 + px + q</math> are double is value to the zeroes of the polynomial <math>2x^2 - 5x - 3</math>, then find the values of p and q.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><b>3</b></p> |
| <p><b>28.(A)</b></p> <p><b>(B)</b></p>                                                                                                                                                                                   | <p>A train covered a certain distance at a uniform speed. If the train would have been 6 km/h faster, it would have taken 4 hours less than the scheduled time. And, if the train were slower by 6 km/hr, it would have taken 6 hours more than the scheduled time. Find the length of the journey.</p> <p style="text-align: center;"><b>OR</b></p> <p>Anuj had some chocolates, and he divided them into two lots A and B. He sold the first lot at the rate of ₹2 for 3 chocolates and the second lot at the rate of ₹1 per chocolate, and got a total of ₹400. If he had sold the first lot at the rate of ₹1 per chocolate, and the second lot at the rate of ₹4 for 5 chocolates, his total collection would have been ₹460. Find the total number of chocolates he had.</p> | <p><b>3</b></p> |
| <p><b>29.</b></p>                                                                                                                                                                                                        | <p>Prove the following that:</p> $\frac{\tan^3 \theta}{1 + \tan^2 \theta} + \frac{\cot^3 \theta}{1 + \cot^2 \theta} = \sec \theta \operatorname{cosec} \theta - 2 \sin \theta \cos \theta$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><b>3</b></p> |
| <p><b>30.</b><br/><b>(A)</b></p> <p style="text-align: center;"><b>OR</b></p>                                                                                                                                            | <p>Prove that a parallelogram circumscribing a circle is a rhombus</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>3</b></p> |



|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>(B)</b>                                                                       | In fig XY and X'Y' are two parallel tangents to a circle with center O and another tangent AB with point of contact C intersecting XY at A X'Y' at B, what is the measure of $\angle AOB$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |
| <b>31.</b>                                                                       | Two coins are tossed simultaneously. What is the probability of getting <ul style="list-style-type: none"> <li>i. At least one head ?</li> <li>ii. At most one tail ?</li> <li>iii. A head and a tail ?</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>3</b> |
| <b>(Section – D)</b><br><b>Section D consists of 4 questions of 5 marks each</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |          |
| <b>32.</b>                                                                       | <p>To fill a swimming pool two pipes are used. If the pipe of larger diameter is used for 4 hours and the pipe of smaller diameter for 9 hours, only half of the pool can be filled. Find how long it would take for each pipe to fill the pool separately, if the pipe of smaller diameter takes 10 hours more than the pipe of larger diameter to fill the pool?</p> <p style="text-align: center;"><b>OR</b></p> <p>In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr from its usual speed and the time of the flight increased by 30 min. Find the scheduled duration of the flight.</p>                                                                                                                                                                                                                                                                                                                                   | <b>5</b> |
| <b>33.</b>                                                                       | <p>Prove that if a line is drawn parallel to one side of a triangle intersecting the other two sides in distinct points, then the other two sides are divided in the same ratio.</p> <p>Using the above theorem prove that a line through the point of intersection of the diagonals and parallel to the base of the trapezium divides the non-parallel sides in the same ratio.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>5</b> |
| <b>34.</b>                                                                       | <p>Due to heavy floods in a state, thousands were rendered homeless. 50 schools collectively decided to provide place and the canvas for 1500 tents and share the whole expenditure equally. The lower part of each tent is cylindrical with base radius 2.8 m and height 3.5 m and the upper part is conical with the same base radius, but of height 1.1 m. If the canvas used to make the tents costs ₹120 per <math>m^2</math>, find the amount shared by each school to set up the tents.</p> <p style="text-align: center;"><b>OR</b></p> <p>There are two identical solid cubical boxes of side 7 cm. From the top face of the first cube a hemisphere of diameter equal to the side of the cube is scooped out. This hemisphere is inverted and placed on the top of the second cube's surface to form a dome.</p> <p>Find:</p> <ul style="list-style-type: none"> <li>i. The ratio of the total surface area of the two new solids formed</li> <li>ii. Volume of each new solid formed.</li> </ul> | <b>5</b> |
| <b>35.</b>                                                                       | The median of the following data is 525. Find the values of x and y, if the total frequency is 100.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>5</b> |

| Class interval | Frequency |
|----------------|-----------|
| 0–100          | 2         |
| 100–200        | 5         |
| 200–300        | x         |
| 300–400        | 12        |
| 400–500        | 17        |
| 500–600        | 20        |
| 600–700        | y         |
| 700–800        | 9         |
| 800–900        | 7         |
| 900–1000       | 4         |

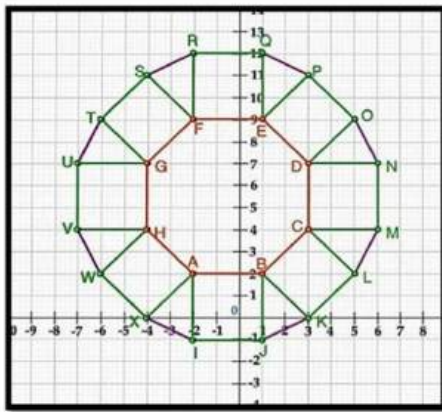
**(Section – E)**

**Section E consists of 3 case study-based questions of 4 marks each.**

- 36.** A tiling or tessellation of a flat surface is the covering of a plane using one or more geometric shapes, called tiles, with no overlaps and no gaps. Historically, tessellations were used in ancient Rome and in Islamic art. You may find tessellation patterns on floors, walls, paintings, etc. Shown below is a tiled floor in the archaeological Museum of Seville, made using squares, triangles, and hexagons.



A craftsman thought of making a floor pattern after being inspired by the above design. To ensure accuracy in his work, he made the pattern on the Cartesian plane. He used regular octagons, squares, and triangles for his floor tessellation pattern.



Use the above figure to answer the questions that follow:

- What is the length of the line segment joining points B and F?
- The centre 'Z' of the figure will be the point of intersection of the diagonals of quadrilateral WXOP. Then, what are the coordinates of Z?
- What are the coordinates of the point on y-axis equidistant from A and G?

OR

What is the area of Trapezium AFGH?

1  
2  
2

37. The School auditorium was to be constructed to accommodate at least 1500 people. The chairs are to be placed in concentric circular arrangement in such way that each succeeding circular row has 10 seats more than the previous one.

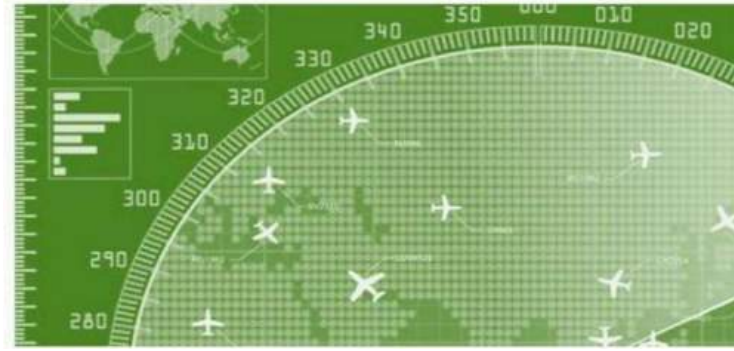


- If the first circular row has 30 seats, how many seats will be there in the 10<sup>th</sup> row?
  - For 1500 seats in the auditorium, how many seats will be there
- OR
- If 1500 seats are to be arranged in the auditorium, how many seats are still left to be put after 10<sup>th</sup> row?
- If there were 17 rows in the auditorium, how many seats will be there in the middle row?

1  
2  
2

38. We all have seen the airplanes flying in the sky but might have not thought of how they actually reach the correct destination. Air Traffic Control (ATC) is a service provided by ground-based air traffic controllers who direct aircraft on the ground and through a given section of controlled airspace, and can provide advisory services to aircraft in non-controlled airspace. Actually, all this air traffic is managed and

regulated by using various concepts based on coordinate geometry and trigonometry.



At a given instance, ATC finds that the angle of elevation of an airplane from a point on the ground is  $60^\circ$ . After a flight of 30 seconds, it is observed that the angle of elevation changes to  $30^\circ$ . The height of the plane remains constantly as  $3000\sqrt{3} \text{ m}$ . Use the above information to answer the questions that follow—

- i. Draw a neat labelled figure to show the above situation diagrammatically.
- ii. What is the distance travelled by the plane in 30 seconds?

**OR**

Keeping the height constant, during the above flight, it was observed that after  $15(\sqrt{3} - 1)$  seconds, the angle of elevation changed to  $45^\circ$ . How much is the distance travelled in that duration?

- iii. What is the speed of the plane in km/hr?

1

2

2

# Preksha

Learn, Achieve, Grow

IIT-JEE | NEET | Foundations

**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 6  
CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

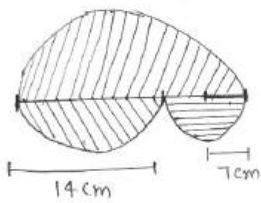
**General Instructions:**

Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
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7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                                                               |              |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                                                              | <b>Marks</b> |
| <b>1.</b>                                                                       | If $2^3 \times 3^a \times 6 \times 7$ is prime factorisation of 2520, then $5a + 2b =$ _____<br>(A) 10 (B) 20 (C) 15 (D) 30                                                                                   | <b>1</b>     |
| <b>2.</b>                                                                       | The centroid of the triangle whose vertices are (1,4) (-1,-1) (3, -2)<br>(A) (3, 1) (B) $(-\frac{5}{2}, 3)$ (C) (2, 0) (D) $(1, \frac{1}{3})$                                                                 | <b>1</b>     |
| <b>3.</b>                                                                       | If the lines given by $2x + 3y - 5 = 0$ and $kx - 6y - 8 = 0$ has unique solution, the k has to be<br>(A) $k \neq -\frac{14}{5}$ (B) $k = \frac{14}{3}$<br>(C) any rational number (D) $k \neq -\frac{19}{5}$ | <b>1</b>     |
| <b>4.</b>                                                                       | The length of tangent drawn from a point 8 cm away from the center of circle of radius 6 cm is<br>(A) $\sqrt{7}cm$ (B) $2\sqrt{7}cm$ (C) 10 cm (D) 5 cm                                                       | <b>1</b>     |
| <b>5.</b>                                                                       | If $\theta$ is an acute angle and $\tan\theta + \cot\theta$ , then value of $\tan 7\theta + \cot 7\theta$ is _____<br>(A) 2 (B) 4 (C) -2 (D) 3                                                                | <b>1</b>     |



|     |                                                                                                                                                                                                                   |   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 6.  | The area of the triangle formed by the lines $y=x$ , $x=6$ and $y=0$ is<br><br>(A) 36 sq units    (B) 18 sq units    (C) 9 sq units    (D) 72 sq units                                                            | 1 |
| 7.  | Area of Shaded Region is<br><br><br>(A) $462 \text{ cm}^2$ (B) $762 \text{ cm}^2$ (C) $1020 \text{ cm}^2$ (D) $926 \text{ cm}^2$ | 1 |
| 8.  | A pair of dice is tossed. The probability of not getting the sum 6 is<br><br>(A) $\frac{5}{36}$ (B) $\frac{31}{36}$ (C) $\frac{5}{18}$ (D) $\frac{5}{9}$                                                          | 1 |
| 9.  | If $2\cos 3\phi = 1$ , $0^\circ < \phi < 90^\circ$ , then $\phi$ is equal to<br><br>(A) $0^\circ$ (B) $9^\circ$ (C) $19^\circ$ (D) $29^\circ$                                                                     | 1 |
| 10. | The remainder when square of any prime number greater than 3 is divided by 6, is<br><br>(A) 1    (B) 3    (C) 2    (D) 4                                                                                          | 1 |
| 11. | The Largest sphere is carved out of a cube of a side 7 cm, then volume of the sphere is _____<br><br>(A) $169.66 \text{ cm}^3$ (B) $179.66 \text{ cm}^3$<br>(C) $209.78 \text{ cm}^3$ (D) $16.53 \text{ cm}^3$    | 1 |
| 12. | If one root of equation $ax^2 + bx + c = 0$ is three times the other, then $b^2:ac$<br><br>(A) 3:1    (B) 3:16    (C) 16:3    (D) 16:1                                                                            | 1 |
| 13. | The Circumference of a circle exceeds the diameter by 16.8 cm then the radius of the circle is _____<br><br>(A) 2.97 cm    (B) 3.92 cm    (C) 4.92 cm    (D) 5.2 cm                                               | 1 |
| 14. | If $\triangle ABC \sim \triangle DEF$ , $AB=4\text{cm}$ , $DE=6\text{cm}$ , $EF=9\text{cm}$ and $FD=12\text{cm}$ , then the perimeter of $\triangle ABC$ is<br><br>(A) 14cm    (B) 27cm    (C) 18cm    (D) 29cm   | 1 |
| 15. | What is the Probability that a leap year has 52 Monday?<br><br>(A) $\frac{2}{7}$ (B) $\frac{4}{7}$ (C) $\frac{5}{7}$ (D) $\frac{6}{7}$                                                                            | 1 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                          |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 16.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The value of x , if the distance between the points (x, -1) and (3, 2) is 5<br><br>(A) (7, -1)                      (B) (6, -2)                      (C) (5, 2)                      (D) (8, -4)         | 1 |
| 17.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The median of first 10 prime number is<br><br>(A) 11                      (B) 12                      (C) 13                      (D) 14                                                                 | 1 |
| 18.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The length of a tangent drawn from a point 8 cm away from the center of a circle of radius 6 cm is<br><br>(A) $\sqrt{7}$ cm                      (B) $2\sqrt{7}$ (C) 10 cm                      (D) 5 cm | 1 |
| <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |                                                                                                                                                                                                          |   |
| 19.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Assertion (A):</b> The number $12^n$ cannot end with digit 0, where n is a natural number<br><b>Reason (R):</b> A number ends with 0, if its prime factorization contains both 2 and 5                | 1 |
| 20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Assertion (A):</b> If $\cos A + \cos^2 A = 1$ , then $\sin^2 A + \sin^4 A = 1$<br><b>Reason (R):</b> $\sin^2 A + \cos^2 A = 1$                                                                        | 1 |
| <p align="center"><b>(Section – B)</b></p> <p align="center"><b>Section B consists of 5 questions of 2 marks each.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                          |   |
| 21.(A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | The 10 <sup>th</sup> term of an A.P. is 52 and 16 <sup>th</sup> term is 82. Find the 32 <sup>nd</sup> term.                                                                                              | 2 |
| (B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OR<br>How many terms are there in the A.P.                                                                                                                                                               |   |
| 22.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ , show that $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$                                                                                     | 2 |
| 23.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | If AP and DQ are medians of triangles ABC and DEF respectively, where<br>$\frac{AB}{DE} = \frac{AP}{DQ}$<br>$\triangle ABC \sim \triangle DEF$ , then prove that                                         | 2 |
| 24.(A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | A Sector of Circle of radius 8 cm contains an angle of $135^\circ$ . Find the area of the sector                                                                                                         | 2 |
| (B)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | OR<br>The area of a Sector is one-twelfth that of the complete circle. Find the angle of the sector                                                                                                      |   |

|                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 25.                                                                                                                    | In an Equilateral triangle of side 24 cm, a circle is inscribed its edges. Find the area of the remaining portion of the triangle . ( $\sqrt{3} = 1.732$ )                                                                                                                                                                                                                                                                                                              | 2 |
| <p style="text-align: center;"><b>(Section – C)</b><br/> <b>Section C consists of 6 questions of 3 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
| 26.                                                                                                                    | AB and CD are common tangent to two circle of equal radii. prove that AB = CD                                                                                                                                                                                                                                                                                                                                                                                           | 3 |
| 27.                                                                                                                    | Let a, b, c, p be rational numbers such that p is not perfect cube.<br>If $a + bp^{\frac{1}{3}} + cp^{\frac{2}{3}} = 0$                                                                                                                                                                                                                                                                                                                                                 | 3 |
| 28.                                                                                                                    | Find all zeros of the polynomial $f(x) = 2x^4 - 2x^3 - 7x^2 + 3x + 6$ if its two zeros are $-\sqrt{\frac{3}{2}}$ and $\sqrt{\frac{3}{2}}$                                                                                                                                                                                                                                                                                                                               | 3 |
| 29.                                                                                                                    | If $\operatorname{cosec} \phi = 2x$ and $\cot \phi = \frac{2}{x}$ , find the value of $2(x^2 - \frac{1}{x^2})$<br><b>OR</b><br>If $\sec \phi + \tan \phi = P$ , show that $\frac{p^2-1}{p^2+1} = \sin \phi$                                                                                                                                                                                                                                                             | 3 |
| 30.                                                                                                                    | Satyam tosses two different coins simultaneously ( say, one is of ₹1 and other of ₹2 ) what is the probability that he gets at least one head ?                                                                                                                                                                                                                                                                                                                         | 3 |
| 31.                                                                                                                    | One says, “give me a hundred, friend ! I shall then become twice as rich you”, the other replies, “ if you give me ten, I shall be six time as rich as you.” Tell me what is the amount of their respective capital.<br><b>OR</b><br>In a competitive examination, one mark is awarded for each correct answer while $\frac{1}{2}$ Mark is deducted for every wrong answer. Suman answered 120 questions and got 90 marks. How many questions did she answer correctly. | 3 |
| <p style="text-align: center;"><b>(Section – D)</b><br/> <b>Section D consists of 4 questions of 5 marks each</b></p>  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |   |
| 32.                                                                                                                    | Two pipes running together can fill a cistern in $3\frac{1}{13}$ minutes. If pipe takes 3 minutes more than the other the other to fill it, find the time in which each pipe would fill the cistern.                                                                                                                                                                                                                                                                    | 5 |
| 33.<br>(a)                                                                                                             | State and Prove Thales theorem<br><b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                             | 5 |
| (b)                                                                                                                    | If $XY \parallel AC$ and $XY$ divides triangular region ABC into two parts in equal areas. Determine $\frac{AX}{AB}$                                                                                                                                                                                                                                                                                                                                                    |   |
| 34.<br>(a)                                                                                                             | The volume of a hemisphere is $2425\frac{1}{2} \text{ cm}^3$ . Find its curved surface area.<br><b>OR</b>                                                                                                                                                                                                                                                                                                                                                               | 5 |
| (b)                                                                                                                    | How many coins 1.75 cm in diameter and 2mm thick must be melted to form a cuboid $11 \text{ cm} \times 10 \text{ cm} \times 7 \text{ cm}$ ?                                                                                                                                                                                                                                                                                                                             |   |

35. The median of the following data is 525. Find the value of x and y if the total frequency is 100

|                |         |           |           |           |           |           |           |           |           |            |
|----------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
| Class interval | 0 - 100 | 100 - 200 | 200 - 300 | 300 - 400 | 400 - 500 | 500 - 600 | 600 - 700 | 700 - 800 | 800 - 900 | 900 - 1000 |
| frequency      | 2       | 5         | x         | 12        | 17        | 20        | y         | 9         | 7         | 4          |

OR

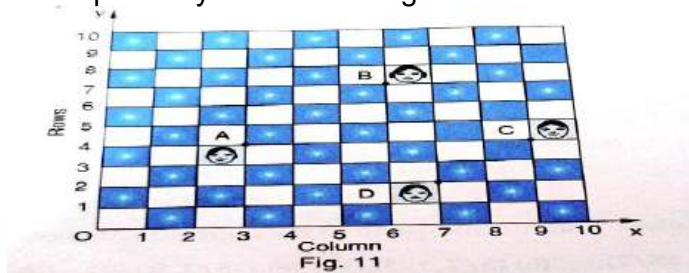
If the mean of the following distributiun is 27, find the value of p.

|           |       |         |         |         |         |
|-----------|-------|---------|---------|---------|---------|
| Class     | 0 -10 | 10 - 20 | 20 - 30 | 30 - 40 | 40 - 50 |
| frequency | 8     | p       | 12      | 13      | 10      |

### (Section – E)

Section E consists of 3 case study-based questions of 4 marks each.

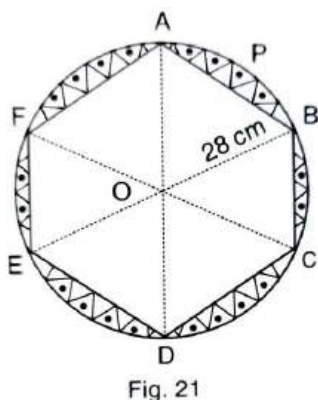
36. Four person John, Saurabh, Salim, and Ratan are sitting in a courtyard at point A, B, C and D respectively as shown in fig.



The courtyard has been divided into small square by drawing equality spaced horizontal and vertical lines. Taking OX and OY as the coordinate axes answer the following questions.

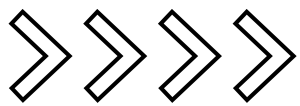
- The coordinates of points A are. \_\_\_\_\_
  - By joining A to B, B to C, C to D, and D to A, the figure formed is not a \_\_\_\_\_
  - The distance between the mid points of AC and BD is \_\_\_\_\_
  - Area of  $\triangle ABC$  is \_\_\_\_\_
- OR
- Perimeter of quadrilateral ABCD is \_\_\_\_\_

37. Aarushi's mother is making a table cover for a round table. Aarushi painted a design on it. It has six equal designs as shown in fig. the radius of the cover is 28cm . Taking  $\sqrt{3} = 1.73$  answer the following questions.



|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                  |
|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|     | <ol style="list-style-type: none"> <li>1. Measure of angle AOB is ____</li> <li>2. The area of angle AOB is ____</li> <li>3. The area of sector OAPB is ____</li> <li>4. The area of design is ____</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1<br>1<br>2<br>2 |
| 38. | <p>Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also, 2 domes at the corners which are hemispherical and 7 smaller domes at the centre. Flag hosting ceremony on Independence Day takes place near these domes.</p>  <ol style="list-style-type: none"> <li>1. How much cloth material will be required to cover 2 big domes each of radius 2.5 metres ?</li> <li>2. Write the formula to find the volume of a cylindrical pillar.</li> <li>3. Find the lateral surface area of two pillars if height of the pillar is 7 m and radius of base is 1.4 m.</li> <li>4. How much is the ratio of sum of volume of two hemispheres of radius 1cm each to the volume of sphere of radius 2 cm ?</li> </ol> | 1<br>1<br>2<br>2 |





# DIRECTOR'S MESSAGE



Dear Students and Parents,

A Warm Welcome to Preksha Institute!

I am delighted to introduce Preksha Institute, a premier coaching institute in India, dedicated to empowering young minds to achieve their dreams!

As the Managing Director, I assure you that our institution is committed to providing a transformative educational experience that fosters academic excellence, creativity, and character development.

Our vision is to become the most trusted and respected coaching institute in the region, known for producing confident, knowledgeable, and successful individuals.

At Preksha Institute, we offer:

- Expert faculty with proven track records
- Comprehensive study materials and resources
- Personalized attention and guidance
- State-of-the-art infrastructure and facilities

Our programs include:

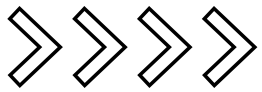
IIT-JEE/NEET/NDA/Olympiads/Boards (CBSE/ICSE/State Boards)

To our students, I pledge that we will provide a supportive and inclusive environment that encourages you to push beyond your limits and achieve your goals.

To our parents, I assure you that we will work in partnership with you to ensure your child receives the best possible education and support. Let's join hands to shape the future of our young generation!

Rajat Saini  
Managing Director, Preksha Institute





## LEADERSHIP TALKS & STUDENT SEMINARS

At Preksha Institute, learning goes beyond classrooms and textbooks. Our Managing Director regularly conducts motivational and guidance seminars for students and parents, helping them gain clarity, confidence, and direction in their academic journey.

These seminars are designed to inspire students preparing for IIT-JEE, NEET, NDA, Sainik School, JNV, RMS, RIMC, and Olympiads, while also guiding parents on how to support their children effectively during competitive exam preparation.



Seminars led by the Managing Director, Preksha Institute

**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 7  
CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

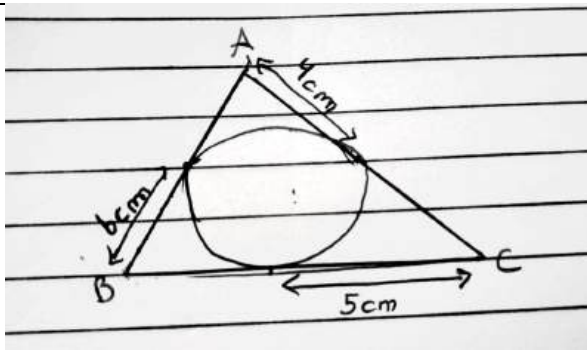
**General Instructions:**

Read the following instructions carefully and follow them:

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2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
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7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
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9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                  |              |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                 | <b>Marks</b> |
| <b>1.</b>                                                                       | If $a = 2^3 \times 3$ , $b = 2 \times 3 \times 5$ , $c = 3^n \times 5$ and L.C.M (a, b, c) = $2^3 \times 3^2 \times 5$ , then $n = ?$<br>(A) 1 (B) 2 (C) 3 (D) 4 | <b>1</b>     |
| <b>2.</b>                                                                       | The area of the triangle formed by (a, b+c), (b, c-a) and (c, a+b) is:<br>(A) $a + b + c$ (B) $abc$ (C) $(a + b + c)^2$ (D) 0                                    | <b>1</b>     |
| <b>3.</b>                                                                       | The Pair of equation $x=a$ and $y=b$ has _____ solution .<br>(A) unique (B) many solution (C) no solution (D) _____                                              | <b>1</b>     |
| <b>4.</b>                                                                       | The perimeter of $\triangle ABC$ is _____ in fig.                                                                                                                | <b>1</b>     |





- (A) 30 cm      (B) 60 cm      (C) 45 cm      (D) 15 cm

5. Value of  $\sec 50^\circ \sin 45^\circ + \cos 40^\circ \operatorname{cosec} 50^\circ$   
 (A) 1      (B) 2      (C) 4      (D) -1
6. Which one of the following is not a quadratic equation  
 (A)  $(x + 2)^2 = 2(x + 3)$       (B)  $x^2 - 3x = 0$   
 (C)  $x^2 + \frac{1}{x^2} = 5$       (D)  $(x + 2)^3 = x^3 - 4$
7. If the circumference of two circle are in the ratio 2:3, what is the ratio of their areas ?  
 (A) 9:4      (B) 4:9      (C) 2:3      (D) 16:81
8. Two different coins are tossed simultaneously the probability of getting at least one head is.  
 (A)  $\frac{1}{4}$       (B)  $\frac{4}{8}$       (C)  $\frac{3}{4}$       (D)  $\frac{7}{8}$
9. If  $\cos \theta = \frac{3}{4}$  the value of  $9 \tan^2 \theta + 9$   
 (A) 10      (B) 12      (C) 16      (D) 14
10. For some Integer m, every integer is of the form \_\_\_\_\_  
 (A) m      (B) m + 1      (C) 2m      (D) 2m + 1
11. The volume of two spheres are in the ratio 64:27. The ratio of their surface area is.  
 (A) 1:2      (B) 2:3      (C) 9:16      (D) 16:9
12. If one root of the equation  $4x^2 - 2x + (\lambda - 4) = 0$  be the reciprocal of the other , the  $\lambda =$  \_\_\_\_  
 (A) 8      (B) -8      (C) 4      (D) -4
13. The area of a sector whose perimeter is four time its r units, is  
 (A)  $\frac{x^2}{4}$  sq cm      (B)  $2r^2$  sq cm      (C)  $r^2$  sq cm      (D)  $\frac{r^2}{2}$  sq cm

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                    |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 14.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | If $\triangle ABC$ and $\triangle DEF$ are similar such that $2AB = DE$ , and $BC = 8\text{cm}$ , then $EF = \underline{\hspace{2cm}}$<br>(A) 16m                      (B) 12cm                      (C) 8cm                      (D) 4cm                                                                          | 1 |
| 15.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The probability of question, the correct answer to certain test question is $\frac{x}{12}$ . if the probability of not guessing the correct answer to this question is $\frac{2}{3}$ then $x = \underline{\hspace{2cm}}$<br>(A) 2                      (B) 3                      (C) 4                      (D) 6 | 1 |
| 16.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | The distance between the points $(1,0)$ and $(2, \cot\theta)$ is<br>(A) 2                      (B) 0                      (C) $\tan \theta$ (D) $\operatorname{cosec} \theta$                                                                                                                                      | 1 |
| 17.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | If the mean of a frequency distribution is 8.1 and $\Sigma fi = 20$ , then $k = \underline{\hspace{2cm}}$<br>(A) 3                      (B) 4                      (C) 5                      (D) 6                                                                                                                | 1 |
| 18.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | If TP and TQ are two tangent to a circle with center so that $\angle POQ = 110^\circ$ , then, $\angle PTO$ is equal to:<br>(A) $60^\circ$ (B) $70^\circ$ (C) $80^\circ$ (D) $90^\circ$                                                                                                                             | 1 |
| <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false.</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |                                                                                                                                                                                                                                                                                                                    |   |
| 19.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Assertion(A):</b> If LCM of $[a,b]$ is 182 and HCF of $[a,b]$ is 13, then product of a and b is 2366<br><b>Reason(R):</b> $(\text{LCM of } a,b) \times (\text{HCF of } a,b) = a \times b$ .                                                                                                                     | 1 |
| 20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Assertion(A):</b> A bike wheel makes 5000 revolutions in covering a distance of 22 km, then diameter of the wheel is 70 cm.<br><b>Reason(R):</b> If a chord subtends a right angle at the centre, then area of the corresponding segment is $\frac{\pi}{2}r^2 - \frac{1}{2}r^2$ .                               | 1 |
| <p><b>(Section – B)</b></p> <p><b>Section B consists of 5 questions of 2 marks each.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                    |   |
| 21.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Find the sum of all 11 terms of an A.P. whose middle most term is 30.                                                                                                                                                                                                                                              | 2 |
| (a)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                    |   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>OR</b>                                                                                                                                                                                                                                                                                                          |   |
| (b)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | In an A.P., the sum of first $n$ terms is $\frac{3n^2}{2} + \frac{5n}{2}$ . Find its 25th term.                                                                                                                                                                                                                    |   |



|                                                                                                                       |                                                                                                                                                                                                                                                                                                           |   |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 22.                                                                                                                   | Prove that<br>$\sin^6 \theta + \cos^2 \theta + 3 \sin^2 \theta . \cos^2 \theta = 1$                                                                                                                                                                                                                       | 2 |
| 23.                                                                                                                   | State and Prove converse of <u>Thales theorem</u>                                                                                                                                                                                                                                                         | 2 |
| 24.<br>(a)                                                                                                            | A paper is in the form of a rectangle ABCD in which AB = 21 cm and BC = 14 cm. A semi-circular portion with BC as diameter is cut off. Find the area of the remaining part.                                                                                                                               | 2 |
| (b)                                                                                                                   | <p style="text-align: center;"><b>OR</b></p> A chord of a circle of radius 14 cm makes a right angle at the centre. Find the area of the major segment of the circle.                                                                                                                                     |   |
| 25.                                                                                                                   | A circle is touching the side BC of triangle ABC at P and touching AB and AC produced at Q and R respectively. Prove that<br>$AQ = \frac{1}{2}(\text{perimeter of } \triangle ABC)$                                                                                                                       | 2 |
| <p style="text-align: center;"><b>(Section – C)</b><br/><b>Section C consists of 6 questions of 3 marks each.</b></p> |                                                                                                                                                                                                                                                                                                           |   |
| 26.                                                                                                                   | Prove that a parallelogram circumscribing a circle is a rhombus.                                                                                                                                                                                                                                          | 3 |
| 27.                                                                                                                   | Find the largest number that divides 2053 and 967 and leaves a remainder of 5 and 7 respectively.                                                                                                                                                                                                         | 3 |
| 28.                                                                                                                   | If Lalita were younger by 5 years than what she really is, then the square of her age (in years) would have been 11 more than 5 times her actual age. What is her age now?                                                                                                                                | 3 |
| 29.                                                                                                                   | If $x = a \sin \theta$ and $y = b \tan \theta$ , then Prove that<br>$\frac{a^2}{x^2} - \frac{b^2}{y^2} = 1$ <p style="text-align: center;"><b>OR</b></p> Prove that $\frac{\sin \theta}{1 - \cos \theta} + \frac{\tan \theta}{1 + \cos \theta} = \sec \theta . \operatorname{cosec} \theta + \cot \theta$ | 3 |
| 30.                                                                                                                   | A bag contains 6 red balls and some blue balls. If the probability of drawing a blue ball from the bag is twice that of a red ball, find the number of blue balls in the bag.                                                                                                                             | 3 |
| 31.<br>(A)                                                                                                            | The sum of the squares of two consecutive multiples of 7 is 637. Find the multiples.                                                                                                                                                                                                                      | 3 |
| (B)                                                                                                                   | <p style="text-align: center;"><b>OR</b></p> Solve for 'x' & 'y'<br>$\frac{x + y}{xy} = 2, \quad \frac{x - y}{xy} = 6$                                                                                                                                                                                    |   |
| <p style="text-align: center;"><b>(Section – D)</b><br/><b>Section D consists of 4 questions of 5 marks each</b></p>  |                                                                                                                                                                                                                                                                                                           |   |

|                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|---------------|--------------|---------|---------|---------|---------|----------|---------|---------|----------|-----------|-------|----|-------|----|-------|-----|-----|---|---|---|
| 32.                                                                                                                                                                                                                                                                                                                                                                                   | The speed of a boat in still water is 15 km/h. It goes 30 km upstream and returns downstream to the original point in 4 hours 30 minutes. Find the speed of the stream.                                                                        | 5       |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| 33.<br>(A)                                                                                                                                                                                                                                                                                                                                                                            | If in $\triangle ABC$ , $LM \parallel AB$ . If $AL = x - 3$ , $AC = 2x$ , $BM = x - 2$ and $BC = 2x + 3$ , find the value of $x$ .                                                                                                             | 5       |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| (B)                                                                                                                                                                                                                                                                                                                                                                                   | If D and E are points on sides AB and AC respectively of a $\triangle ABC$ such that $DE \parallel BC$ and $BD = CE$ . Prove that $\triangle ABC$ is isosceles.                                                                                |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| 34.<br>(A)                                                                                                                                                                                                                                                                                                                                                                            | A solid toy is in the form of a hemisphere surmounted by a right circular cone. Height of the cone is 2 cm and the diameter of the base is 4 cm. If a right circular cylinder circumscribes the solid, find how much more space it will cover. | 5       |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| (B)                                                                                                                                                                                                                                                                                                                                                                                   | A solid is in the shape of a cone standing on a hemisphere with both their radii equal to 1 cm and the height of the cone equal to its radius. Find the volume of the solid in terms of $\pi$ .                                                |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| 35.<br>(A)                                                                                                                                                                                                                                                                                                                                                                            | The median of the following data is 52.5. Find the value of $x$ and $y$ if the total frequency is 100.                                                                                                                                         | 5       |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| (B)                                                                                                                                                                                                                                                                                                                                                                                   | Find the median of following data :                                                                                                                                                                                                            |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| <table border="1"><tr><td>Class Interval</td><td>0-100</td><td>100-200</td><td>200-300</td><td>300-400</td><td>400-500</td><td>500-600</td><td>600-700</td><td>700-800</td><td>800-900</td><td>900-1000</td></tr><tr><td>Frequency</td><td>2</td><td>5</td><td><math>x</math></td><td>12</td><td>17</td><td>20</td><td><math>y</math></td><td>9</td><td>7</td><td>4</td></tr></table> |                                                                                                                                                                                                                                                |         | Class Interval | 0-100         | 100-200      | 200-300 | 300-400 | 400-500 | 500-600 | 600-700  | 700-800 | 800-900 | 900-1000 | Frequency | 2     | 5  | $x$   | 12 | 17    | 20  | $y$ | 9 | 7 | 4 |
| Class Interval                                                                                                                                                                                                                                                                                                                                                                        | 0-100                                                                                                                                                                                                                                          | 100-200 | 200-300        | 300-400       | 400-500      | 500-600 | 600-700 | 700-800 | 800-900 | 900-1000 |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| Frequency                                                                                                                                                                                                                                                                                                                                                                             | 2                                                                                                                                                                                                                                              | 5       | $x$            | 12            | 17           | 20      | $y$     | 9       | 7       | 4        |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| <table border="1"><tr><td>Marks</td><td>No of student</td></tr><tr><td>Less than 10</td><td>0</td></tr><tr><td>&lt; 30</td><td>10</td></tr><tr><td>&lt; 50</td><td>25</td></tr><tr><td>&lt; 70</td><td>43</td></tr><tr><td>&lt; 90</td><td>65</td></tr><tr><td>&lt; 110</td><td>87</td></tr><tr><td>&lt; 130</td><td>96</td></tr><tr><td>&lt; 150</td><td>100</td></tr></table>       |                                                                                                                                                                                                                                                |         | Marks          | No of student | Less than 10 | 0       | < 30    | 10      | < 50    | 25       | < 70    | 43      | < 90     | 65        | < 110 | 87 | < 130 | 96 | < 150 | 100 |     |   |   |   |
| Marks                                                                                                                                                                                                                                                                                                                                                                                 | No of student                                                                                                                                                                                                                                  |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| Less than 10                                                                                                                                                                                                                                                                                                                                                                          | 0                                                                                                                                                                                                                                              |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 30                                                                                                                                                                                                                                                                                                                                                                                  | 10                                                                                                                                                                                                                                             |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 50                                                                                                                                                                                                                                                                                                                                                                                  | 25                                                                                                                                                                                                                                             |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 70                                                                                                                                                                                                                                                                                                                                                                                  | 43                                                                                                                                                                                                                                             |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 90                                                                                                                                                                                                                                                                                                                                                                                  | 65                                                                                                                                                                                                                                             |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 110                                                                                                                                                                                                                                                                                                                                                                                 | 87                                                                                                                                                                                                                                             |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 130                                                                                                                                                                                                                                                                                                                                                                                 | 96                                                                                                                                                                                                                                             |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| < 150                                                                                                                                                                                                                                                                                                                                                                                 | 100                                                                                                                                                                                                                                            |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| <p style="text-align: center;"><b>(Section – E)</b></p> <p style="text-align: center;"><b>Section E consists of 3 case study-based questions of 4 marks each.</b></p>                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |
| 36.                                                                                                                                                                                                                                                                                                                                                                                   | Mohan was given a task by his sport teacher to complete 7 rounds of the school ground. The distance of one round is $5\sqrt{5} + 3\sqrt{3}$ km. He takes 15 minutes to complete one round.                                                     |         |                |               |              |         |         |         |         |          |         |         |          |           |       |    |       |    |       |     |     |   |   |   |



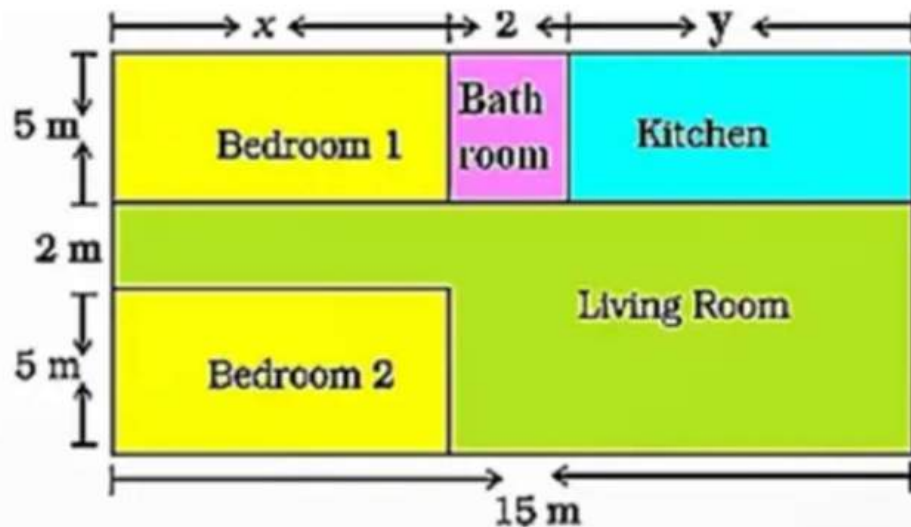
1  
1  
2

- Is  $5\sqrt{5} + 3\sqrt{3}$  a rational or an irrational number ?
- Find the total distance Mohan has to cover ?
- Rationalise the denominator of  $\frac{1}{5\sqrt{5}+3\sqrt{3}}$

**OR**

Simplify  $(5\sqrt{5} + 3\sqrt{3})^2$

- 37.** In the given layout, the design and measurement has been made such that the area of two bedrooms and kitchen together is 95 sq.m



Based on the above information, answer the following questions:

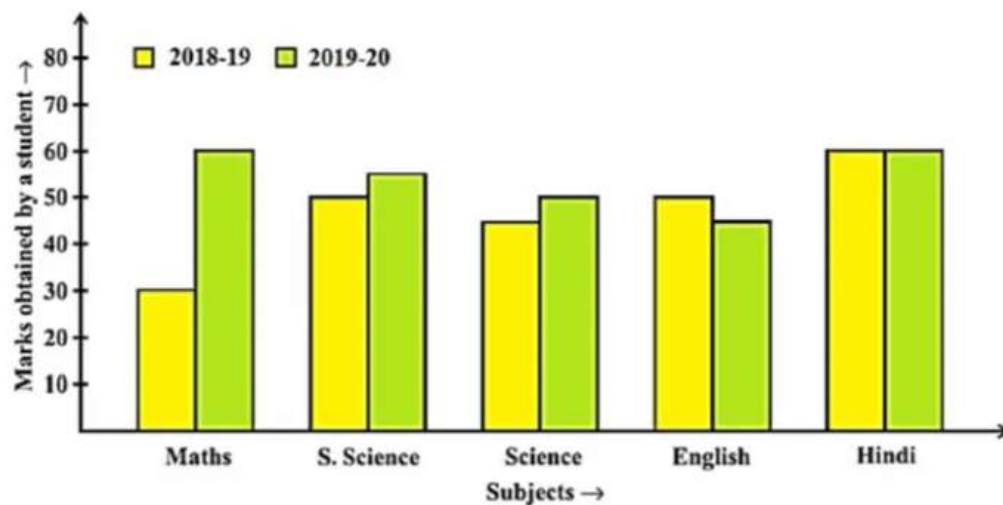
- Find the length of the outer boundary of the layout
- Write the pair of linear equations representing the above situation
- Which is the solution satisfying both the equations formed in (ii)  
(a)  $x = 6, y = 7$       (b)  $x = 8, y = 5$       (c)  $x = 7, y = 6$

**OR**

Find the area of each bedroom and the kitchen.

1  
1  
2

- 38.** The class teacher of class X preparing result analysis of a student. She compares the marks of a student obtained in class IX (2018 -19) and Class X (2019 -20) using the double bar graph as shown below:



1  
1  
2

Based on above information, answer the following questions:

- In which subject has the performance improved the most ?
- In which subject the performance is deteriorated ?
- Find the total marks obtained by students in 2018-19 and 2019-20

**OR**

What is the difference in Maths subject ?



# Preksha

Learn, Achieve, Grow

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**MATHEMATICS STANDARD**  
**SAMPLE QUESTION PAPER 8**  
**CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

**General Instructions:**

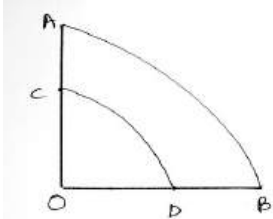
Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                                                     |              |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                                                    | <b>Marks</b> |
| <b>1.</b>                                                                       | If $n$ is any natural number, then $6^n - 5^n$ always ends with<br>(A) 1 (B) 3 (C) 5 (D) 7                                                                                                          | <b>1</b>     |
| <b>2.</b>                                                                       | For what value of $x$ will the points $(x, -1), (2, 1), (x, -1), (2, 1), (x, -1), (2, 1)$ and $(4, 5), (4, 5), (4, 5)$ lie on a line?<br>(A) -1 (B) 2 (C) 1 (D) 4                                   | <b>1</b>     |
| <b>3.</b>                                                                       | The system of equations $ax+3y=1$ and $ax+3y=1, -12x+ay=2$ has _____ for all real values of $a$ .<br>(A) many solution (B) unique solution (C) no solution (D) None of these                        | <b>1</b>     |
| <b>4.</b>                                                                       | PQ is a tangent to a circle with centre O at the point P. If $\triangle OPQ$ is an isosceles triangle, then $\angle OQP$ is equal to<br>(A) $30^\circ$ (B) $45^\circ$ (C) $60^\circ$ (D) $90^\circ$ | <b>1</b>     |
| <b>5.</b>                                                                       | If $\tan A = \frac{3}{4}$ and $A + B = 90^\circ$ , then what is the value of $\cot B$ ?<br>(A) $\frac{2}{3}$ (B) $\frac{1}{4}$ (C) $\frac{4}{3}$ (D) $\frac{3}{4}$                                  | <b>1</b>     |



|     |                                                                                                                                                                                                         |   |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 6.  | If $\sin a$ and $\cos a$ are the roots of the equation $ax^2 + bx + c = 0$ , then $b^2 =$<br>(A) $a^2 + bx + c$ (B) $a^2 + 2ac$ (C) $a^2 + ac$ (D) $a^2 + 4ac$                                          | 1 |
| 7.  | If diameter of a circle is increased by 40%, then its area is increased by<br>(A) 96% (B) 40% (C) 80% (D) 49%                                                                                           | 1 |
| 8.  | In a family of 3 children, the probability of having at least one boy is.<br>(A) $\frac{7}{8}$ (B) $\frac{1}{8}$ (C) $\frac{5}{8}$ (D) $\frac{3}{4}$                                                    | 1 |
| 9.  | If $\sin \theta = \frac{a}{\sqrt{a^2 + b^2}}$ , then the value of $\tan \theta$ is<br>(A) $\frac{b}{a}$ (B) $\frac{a}{b}$ (C) $\frac{a}{2b}$ (D) 0                                                      | 1 |
| 10. | The product of the zeros of $x^3 + 4x^2 + x - 6$ is<br>(A) -4 (B) 4 (C) 6 (D) -6                                                                                                                        | 1 |
| 11. | If a two-digit number is chosen at random, the probability that the number chosen is a multiple of 3 is<br>(A) $\frac{9}{10}$ (B) $\frac{29}{100}$ (C) $\frac{1}{3}$ (D) $\frac{7}{27}$                 | 1 |
| 12. | The diameter of a sphere is 6 cm. It is melted and drawn into a wire of diameter 2 mm.<br>The length of wire is<br>(A) 12m (B) 18m (C) 36m (D) 64m                                                      | 1 |
| 13. | The value of $\sqrt{6 + \sqrt{6 + \sqrt{6 + \dots}}}$ is<br>(A) $\sqrt{4}$ (B) 3 (C) 2 (D) 3.5                                                                                                          | 1 |
| 14. | Area of the largest triangle that can be inscribed in a semicircle of radius $r$ units is<br>(A) $\frac{r^2}{2}$ sq. units (B) $\frac{r^2\sqrt{3}}{4}$ (C) $\frac{2r^2}{4}$ (D) $\frac{r^2\sqrt{3}}{2}$ | 1 |
| 15. | A chord of a circle of radius 10 cm subtends a right angle at the centre.<br>The length of chord is.<br>(A) $5\sqrt{2}$ (B) $10\sqrt{2}$ (C) 5 (D) $10\sqrt{3}$                                         | 1 |
| 16. | If points $(t, 2t), (-2, 6), (t, 2t), (-2, 6)$ and $(3, 1), (3, 1), (3, 1)$ are collinear, then $t =$<br>(A) $\frac{3}{4}$ (B) $\frac{4}{3}$ (C) $\frac{5}{3}$ (D) $\frac{3}{5}$                        | 1 |
| 17. | If 35 is removed from the data 30, 34, 35, 26, 37, 38, 39, 40 then the median increases by<br>(A) 2 (B) 1.5 (C) 1 (D) 0.5                                                                               | 1 |

|                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 18.                                                                                                                    | The length of the tangent drawn from a point 8 cm away from the centre of a circle of radius 6 cm is<br>(A) $\sqrt{7}$ cm      (B) $2\sqrt{7}$ cm      (C) 10 cm      (D) 5 cm                                                                                                                                                                                                                                                                                                                                                                                              | 1 |
|                                                                                                                        | <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b><br/>           (A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)<br/>           (B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)<br/>           (C) Assertion (A) is true but reason (R) is false.<br/>           (D) Assertion (A) is false but reason (R) is true.</p> |   |
| 19.                                                                                                                    | <p><b>Assertion(A):</b> If a chord AB subtends an angle of <math>60^\circ</math> at the centre of a circle, then the angle between the tangents at A and B is also <math>60^\circ</math>.</p> <p><b>Reason(R):</b> The length of the tangent from an external point B to a circle with centre O is always less than OP.</p>                                                                                                                                                                                                                                                 | 1 |
| 20.                                                                                                                    | <p><b>Assertion(A):</b> A line drawn parallel to any one side of a triangle intersects the other two sides proportionally.</p> <p><b>Reason(R):</b> Parallel lines cannot be drawn to any one side of a triangle.</p>                                                                                                                                                                                                                                                                                                                                                       | 1 |
| <p style="text-align: center;"><b>(Section – B)</b><br/> <b>Section B consists of 5 questions of 2 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
| 21.(a)                                                                                                                 | Find the middle term of the A.P.<br>7, 13, 19, ..... 241                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2 |
|                                                                                                                        | OR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |
| (b)                                                                                                                    | If the 8 <sup>th</sup> term of an A.P. is 31 and 15 <sup>th</sup> term is 16 more than the 11 <sup>th</sup> , find the A.P.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |   |
| 22.                                                                                                                    | If $\tan A = 2$ , then Evaluate $\sec A \sin A + \tan^2 A - \operatorname{cosec} A$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 |
| 23.                                                                                                                    | In $\triangle ABC$ , DE is parallel to base BC, with D on AB and E on AC, if $\frac{AD}{DB} = \frac{2}{3}$ , find $\frac{BC}{DE}$                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| 24.<br>(a)                                                                                                             | <p>ABCD is a flower bed, if OA = 21 m and OC = 14 m, find the area of bed</p>  <p style="text-align: center;">OR</p>                                                                                                                                                                                                                                                                                                                                                                     | 2 |

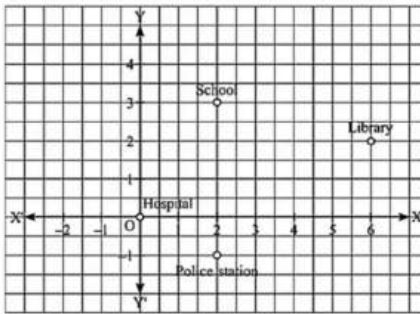
|                                                                                                                       |                                                                                                                                                                                                                                                                 |   |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| (b)                                                                                                                   | A Circular grassy plot of land, 42 m is diameter has a path 3.5m wide running round it on the outside. Find the cost of gravelling to path at ₹ 4 per square metre.                                                                                             |   |
| 25.                                                                                                                   | A Circle touches all the four sides of a quadrilateral ABCD. Prove that $AB + CD = BC + DA$                                                                                                                                                                     | 2 |
| <p style="text-align: center;"><b>(Section – C)</b><br/><b>Section C consists of 6 questions of 3 marks each.</b></p> |                                                                                                                                                                                                                                                                 |   |
| 26.                                                                                                                   | Two tangents TP and TQ are drawn to circle with center O from an external point T. Prove that $\angle PTQ = 2\angle OPQ$                                                                                                                                        | 3 |
| 27.                                                                                                                   | Find the largest number which on dividing 1251, 9377, and 15628 leaves remainders 1, 2, and 3 respectively                                                                                                                                                      | 3 |
| 28.                                                                                                                   | A two – digit number is such that the product of the digits is 12, when 36 is added to the number the digits is 12, when 36 is added to the number the digits interchange their places. Formulate the quadratic equation whose roots are digits of the numbers. | 3 |
| 29.                                                                                                                   | If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ , show that $\cos \theta - \sin \theta = \sqrt{2} \sin \theta$ .                                                                                                                                          | 3 |
| (A)                                                                                                                   | <b>OR</b>                                                                                                                                                                                                                                                       |   |
| (B)                                                                                                                   | If $a \cos \theta - b \sin \theta = C$ , prove that $a \sin \theta + b \cos \theta = \pm \sqrt{a^2 + b^2 - c^2}$                                                                                                                                                |   |
| 30.                                                                                                                   | A card is drawn at random from a pack of 52 cards find the probability that card drawn is<br>i. Neither an ace nor a king<br>ii. Either a black card or a king                                                                                                  | 3 |
| 31.                                                                                                                   | X takes 3 hours more than Y to walk 30 km. But, if X doubles his pace, he is a head of Y by 1.5 hours. Find their speed of walking                                                                                                                              | 3 |
| (A)                                                                                                                   |                                                                                                                                                                                                                                                                 |   |
| (B)                                                                                                                   | Solve for 'x' & 'y' $x+y = a+b$ , $ax - by = a^2 + b^2$                                                                                                                                                                                                         |   |
| <p style="text-align: center;"><b>(Section – D)</b><br/><b>Section D consists of 4 questions of 5 marks each</b></p>  |                                                                                                                                                                                                                                                                 |   |
| 32.                                                                                                                   | Solve for X+Y,<br>$a(x + y) + b(x - y) = a^2 - ab + b^2$ $a(x + y) - b(x - y) = a^2 + ab + b^2$                                                                                                                                                                 | 5 |
| 33.                                                                                                                   | If the diagonals of a quadrilateral divide each other proportionally, then it is a trapezium.                                                                                                                                                                   | 5 |
| (A)                                                                                                                   | <b>OR</b>                                                                                                                                                                                                                                                       |   |
| (B)                                                                                                                   | Prove that if in two triangles, one pair of corresponding sides are proportional and the included angles are equal then the two triangle are similar.                                                                                                           |   |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                |         |         |         |         |           |       |           |    |    |    |    |   |   |   |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------|---------|---------|---------|-----------|-------|-----------|----|----|----|----|---|---|---|
| 34.            | <p>A Solid is Composed of a cylinder with hemispherical ends. If the while length of the solid is 108cm and diameter of the hemispherical ends is 36cm. find the cost of polishing the surface of the solid at the rate of 7 paise per sq cm</p> <p style="text-align: center;"><b>OR</b></p> <p>A hemispherical separation is cut out from one face of the cubical wooden block such that the diameter ‘L” of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.</p> | 5              |         |         |         |         |           |       |           |    |    |    |    |   |   |   |
| 35.(A)         | <p>If the median of the distribution given below is 28.5, find the value of ‘x’ and ‘y’</p> <table border="1"><tr><td>Class Interval</td><td>0-10</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td></tr><tr><td>Frequency</td><td>5</td><td>x</td><td>20</td><td>15</td><td>y</td><td>5</td></tr></table>                                                                                                                                                                                     | Class Interval | 0-10    | 10-20   | 20-30   | 30-40   | 40-50     | 50-60 | Frequency | 5  | x  | 20 | 15 | y | 5 | 5 |
| Class Interval | 0-10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10-20          | 20-30   | 30-40   | 40-50   | 50-60   |           |       |           |    |    |    |    |   |   |   |
| Frequency      | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | x              | 20      | 15      | y       | 5       |           |       |           |    |    |    |    |   |   |   |
| (B)            | <p>Find the mean of following data</p> <table border="1"><tr><td>Interval</td><td>1-200</td><td>201-400</td><td>401-600</td><td>601-800</td></tr><tr><td>Frequency</td><td>5</td><td>x</td><td>20</td><td>15</td></tr></table>                                                                                                                                                                                                                                                                                         | Interval       | 1-200   | 201-400 | 401-600 | 601-800 | Frequency | 5     | x         | 20 | 15 |    |    |   |   |   |
| Interval       | 1-200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 201-400        | 401-600 | 601-800 |         |         |           |       |           |    |    |    |    |   |   |   |
| Frequency      | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | x              | 20      | 15      |         |         |           |       |           |    |    |    |    |   |   |   |

**(Section – E)**  
**Section E consists of 3 case study-based questions of 4 marks each.**

|     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 36. | <p>On one day, principal of a particular school visited the classroom. Class teacher was teaching the concept of polynomial to students. He was very much impressed by her way of teaching. To check whether the students also understand the concept taught by her or not, he asked various questions to students.</p> <div data-bbox="479 1087 1170 1514" data-label="Image"> </div> <p>i. What is the name of the polynomial of the type <math>ax^2 + bx + c</math>, <math>a \neq 0</math> ?</p> <p>ii. What is the value of k, if <math>(x - 1)</math> is a factor of <math>4x^3 + 3x^2 - 4x + k</math> ?</p> <p style="text-align: center;"><b>OR</b></p> <p>What is the value of a if <math>x + 2</math> is the factor of <math>x^3 - 2ax^2 + 16</math>?</p> <p>iii. What is the degree of the polynomial <math>(y^3-3)(y^2+8)(y^3-3)(y^2+8)(y^3-3)(y^2+8)</math> ?</p> | <p>1</p> <p>1</p> <p>2</p> |
| 37. | Aditya is a Class IX student residing in a village. One day, he went to a city Hospital along with his grandfather for general checkup. From there he visited three places –                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |

School, Library and Police Station. After returning to his village, he plotted a graph by taking Hospital as origin and marked three places on the graph as per his direction of movement and distance. The graph is shown below:



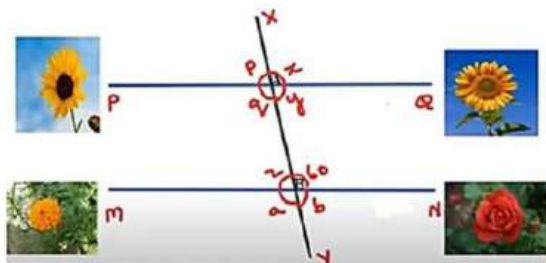
Based on the above situation, answer the following questions:

- What are the coordinates of the school?
  - What are the coordinates of the police station?
  - What is the distance between School and Police Station?
- OR
- In which quadrant does  $(-1, -2)$ ,  $(-2, 4)$ ,  $(3, -1)$ ,  $(-1, 4)$  lie?

1  
1  
2

- 38.** Once four students of class VIII were selected for plantation of flower plants in the school garden. The selected students were Pankaj, Raju, Deepak and Renu. As shown PQ and MN are the parallel lines of the plants. Pankaj planted a sunflower plant at P, then Raju planted another sunflower at Q. Further, Deepak was called to plant any flowering plant at point M. He planted a Marigold there. Now it was turn of Renu. She was told to plant a flowering plant different from the three planted one. So she planted a rose plant at N. There was water pipeline XY which intersect PQ and MN at A and B and  $\angle XBN = 60^\circ$ .

Based on the above information, answer the following questions:



Based on the above information, answer the following questions:

- What is the value of  $\angle x$ ?
- What is the value of  $\angle x$ ?
- What is the value of  $\frac{(\angle p + \angle q + \angle a + \angle x)}{6}$ ?

OR

What is the value of  $\frac{(\angle q + \angle y + \angle a + \angle b)}{4}$ ?

1  
1  
2



**MATHEMATICS STANDARD  
SAMPLE QUESTION PAPER 9  
CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

**General Instructions:**

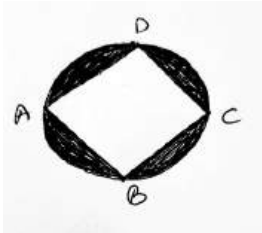
Read the following instructions carefully and follow them:

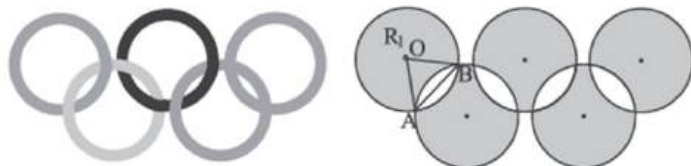
1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                                                          |              |
|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                                                         | <b>Marks</b> |
| <b>1.</b>                                                                       | The LCM and HCF of two rational numbers are equal; the numbers must be:<br>(A) Prime (B) Co-prime (C) Composite (D) Equal                                                                                | <b>1</b>     |
| <b>2.</b>                                                                       | If the points A(3,1), B(5,p) and C(7,-5) are collinear, then p =<br>(A) -2 (B) 2 (C) -1 (D) 1                                                                                                            | <b>1</b>     |
| <b>3.</b>                                                                       | If the system of equations $2x+3y=7$ , $2ax+(a+b)y=28$ , has infinitely many solutions, then<br>(A) $a = 2b$ (B) $b=2a$ (C) $a + 2b = 0$ (D) $2ab = 0$                                                   | <b>1</b>     |
| <b>4.</b>                                                                       | If tangents PA and PB are drawn to a circle such that $\angle APB = 30^\circ$ and chord AC is drawn parallel to tangent PB, then $\angle ABC =$<br>(A) $60^\circ$ (B) $90^\circ$ (C) $30^\circ$ (D) None | <b>1</b>     |
| <b>5.</b>                                                                       | If $\cos \theta = \sin \theta$ , then $\tan \theta =$<br>(A) $\frac{1}{\sqrt{3}}$ (B) $\sqrt{3}$ (C) 1 (D) 0                                                                                             | <b>1</b>     |

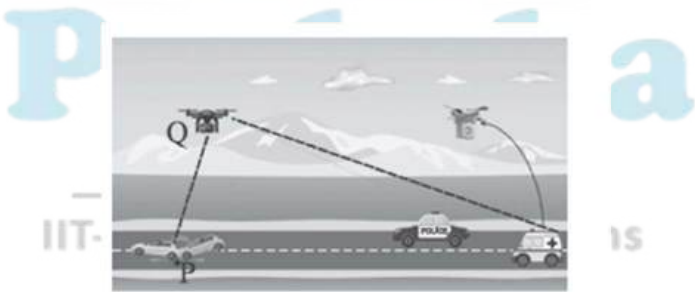
|     |                                                                                                                                                                                                                         |   |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 6.  | If $\alpha$ and $\beta$ are roots of the equation $x^2 + ax + b = 0$ , then $\alpha + \beta$<br>(A) 1 (B) 2 (C) -2 (D) -1                                                                                               | 1 |
| 7.  | If the difference between the circumference and radius of a circle is 37 cm, then circumference of the circle =<br>(A) 154 (B) 44 (C) 14 (D) 7                                                                          | 1 |
| 8.  | Find the probability of getting 53 Fridays in a leap year.<br>(A) $\frac{3}{7}$ (B) $\frac{2}{7}$ (C) $\frac{1}{7}$ (D) 1                                                                                               | 1 |
| 9.  | If $\sin a = \frac{1}{2}$ , then the value of $\cos B = \frac{1}{2}$ , $\beta - \alpha =$ is<br>(A) $45^\circ$ (B) $60^\circ$ (C) $50^\circ$ (D) $30^\circ$                                                             | 1 |
| 10. | The smallest number by which 127 should be multiplied so as to get a perfect square is.<br>(A) $\sqrt{27}$ (B) $3\sqrt{3}$ (C) $\sqrt{3}$ (D) 3                                                                         | 1 |
| 11. | A solid sphere of radius $r$ is melted and cast into a sphere of a solid cone of height $2r$ . If the radius of the base is<br>(A) $2r$ (B) $3r$ (C) $r$ (D) $4r$                                                       | 1 |
| 12. | If the equation $ax^2 + bx + c = 0$ has equal roots, then<br>(A) $\frac{-b}{2a}$ (B) $\frac{b}{2a}$ (C) $\frac{-b^2}{4a}$ (D) $\frac{b^2}{4a}$                                                                          | 1 |
| 13. | The area of a circle whose area and circumference are numerically equal is.<br>(A) $2\pi$ sq. units (B) $4\pi$ sq. units<br>(C) $6\pi$ sq. units (D) $8\pi$ sq. units                                                   | 1 |
| 14. | In $\triangle ABC$ , $AB = AC$ , such that Area ( $\triangle ABD$ ) = $12 \text{ cm}^2$ , and $BC = 10 \text{ cm}$ . Then $AD = ?$<br>(A) 9 cm (B) 10 cm (C) 6 cm (D) 8 cm                                              | 1 |
| 15. | A card is drawn at random from a well-shuffled deck of 52 cards. Find the probability of getting <b>neither a red card nor a queen</b> .<br>(A) $\frac{6}{13}$ (B) $\frac{8}{13}$ (C) $\frac{9}{13}$ (D) $\frac{2}{13}$ | 1 |
| 16. | Name the type of triangle formed by the points $A(5,6)$ , $B(-4,-2)$ , $C(7,5)$ .<br>(A) Scalene (B) Isosceles (C) Equilateral (D) Rights                                                                               | 1 |
| 17. | If the mean of the frequency distribution is 7.5 and $\Sigma f_i = 50$ and $\Sigma fix_i = 375$ , then $K$ is equal to<br>(A) 35 (B) 25 (C) 5 (D) 15                                                                    | 1 |

|                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 18.                                                                                                                                                  | If the angle between two radii of a circle is $130^\circ$ , the angle between the tangents at the ends of the radii is<br>(A) $50^\circ$ (B) $90^\circ$ (C) $70^\circ$ (D) $40^\circ$                                                                                                                                                                                                                                                                                                                                                       | 1 |
|                                                                                                                                                      | <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false.</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |   |
| 19.                                                                                                                                                  | <p><b>Assertion(A):</b> <math>\sqrt{x}</math> is an irrational number, where x is a prime number</p> <p><b>Reason(R):</b> Square root of any Prime number is an irrational.</p>                                                                                                                                                                                                                                                                                                                                                             | 1 |
| 20.                                                                                                                                                  | <p><b>Assertion(A):</b> <math>\sin(A + B) = \sin A + \sin B</math></p> <p><b>Reason(R):</b> For any value of <math>\theta</math>, <math>1 + \tan^2\theta = \sec^2\theta</math></p>                                                                                                                                                                                                                                                                                                                                                          | 1 |
| <p style="text-align: center;"><b>(Section – B)</b></p> <p style="text-align: center;"><b>Section B consists of 5 questions of 2 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
| 21.(a)                                                                                                                                               | Find the sum:<br>$(-5) + (-8) + (-11) + \dots + (-230)$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2 |
|                                                                                                                                                      | <b>OR</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |
| (b)                                                                                                                                                  | Find the sum of all integers between 50 and 500, which are divisible by 7.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |   |
| 22.                                                                                                                                                  | Given that $\alpha + \beta = 90^\circ$ Show that $\sqrt{\cos \alpha \cdot \operatorname{cosec} \beta - \cos \alpha \cdot \sin \beta} = \sin \alpha$                                                                                                                                                                                                                                                                                                                                                                                         | 2 |
| 23.                                                                                                                                                  | E is a point on side AD produced of a parallelogram ABCD and BE intersect CD at E. Prove that $\triangle ABE = \triangle CFB$                                                                                                                                                                                                                                                                                                                                                                                                               | 2 |
| 24.                                                                                                                                                  | <p>(a) Four cows are tethered at four corners of a square plot, so that they Just cannot reach one another what area will be left ungrazed ?</p> <p style="text-align: center;"><b>OR</b></p> <p>(b) A regular hexagon is inscribed in a circle if the area of hexagon is <math>24\sqrt{3} \text{ cm}^2</math>, find the area of the circle ?</p>                                                                                                                                                                                           | 2 |

|                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                    |   |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 25.                                                                                                       | <p>ABCD is square with side <math>2\sqrt{2}cm</math> and inscribed in a circle. Find the area of the shaded region</p>                                                                                                                                                                                            | 2 |
| <p align="center"><b>(Section – C)</b><br/> <b>Section C consists of 6 questions of 3 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                    |   |
| 26.                                                                                                       | Prove that a parallelogram circumscribing a circle is a Rhombus.                                                                                                                                                                                                                                                                                                                                   | 3 |
| 27.                                                                                                       | Find the H.C.F of 65 and 117 and express it in the form of $65m + 117n$                                                                                                                                                                                                                                                                                                                            | 3 |
| 28.                                                                                                       | <p>Solve by factorization method</p> $9x^2 - 9(a + b) + (2a^2 + 5ab + 2b^2) = 0$                                                                                                                                                                                                                                                                                                                   | 3 |
| 29.                                                                                                       | <p>(A) Prove that</p> $\frac{\sin \theta}{1 - \cos \theta} + \frac{\tan \theta}{1 + \cos \theta} = \sec \theta \cdot \operatorname{cosec} \theta + \cot \theta$ <p align="center"><b>OR</b></p> <p>(B) Prove that</p> $\sqrt{\sec^2 \theta + \operatorname{cosec}^2 \theta} = \tan \theta + \cot \theta$                                                                                           | 3 |
| 30.                                                                                                       | <p>A piggy bank contains hundred 50 paise coin, fifty ₹1 coins, twenty ₹2 coins and then ₹ 5 coins if it is equally likely that one of the coins will fall out when the bank is turned upside down, find the probability that the coin which f</p> <ol style="list-style-type: none"> <li>Will be 50 paise coin</li> <li>Will be of value more than ₹1</li> <li>Will be a ₹1 or ₹2 coin</li> </ol> | 3 |
| 31.                                                                                                       | <p>(A) In a <math>\triangle ABC</math> <math>\angle A = x</math>, <math>\angle B = 3x</math>, <math>\angle C = y</math><br/> If <math>3y - 5x = 30</math>, prove that the triangle is right angled</p> <p align="center"><b>OR</b></p> <p>(B) The Income of X and Y are in the ratio 8:7 and their expenditures are in the ratio 19:16. If each saves ₹1250, find their income.</p>                | 3 |
| <p align="center"><b>(Section – D)</b><br/> <b>Section D consists of 4 questions of 5 marks each</b></p>  |                                                                                                                                                                                                                                                                                                                                                                                                    |   |
| 32.                                                                                                       | <p>A person on tour has ₹360 for his expenses.<br/> If he extends his tour for 4 days, he has to cut down his daily expenses by ₹3.<br/> Find the original duration of the tour.</p>                                                                                                                                                                                                               | 5 |

|                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|-----------|----|---|----|---|----|----|-----|----|----|
| 33.<br>(A)                                                                                                                                                                                                                                                                                              | Prove that the areas of two similar triangles are in the ratio of the squares of the corresponding medians.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 5                          |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| OR                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| (B)                                                                                                                                                                                                                                                                                                     | D and E are points on the sides AB and AC respectively of $\triangle ABC$ such that $DE \parallel BC$ and divides $\triangle ABC$ into two parts equal in area.<br>Find $\frac{BD}{AB}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| 34.(A)                                                                                                                                                                                                                                                                                                  | The largest cone is carved out from a solid cube of side 21 cm.<br>Find the volume of the remaining solid.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                          |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| OR                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| (B)                                                                                                                                                                                                                                                                                                     | The difference between outside and inside surface areas of a cylindrical metallic pipe 14 cm long is $44 \text{ cm}^2$ .<br>If the pipe is made of $99 \text{ cm}^3$ of metal, find the outer and inner radii of the pipe.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| 35.(A)                                                                                                                                                                                                                                                                                                  | If the median of the distribution given below is 46, find the missing values                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5                          |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| <table border="1"><tr><td>Class Interval</td><td>10-20</td><td>20-30</td><td>30-40</td><td>40-50</td><td>50-60</td><td>60-70</td><td>70-80</td><td>Total</td></tr><tr><td>Frequency</td><td>12</td><td>30</td><td>?</td><td>65</td><td>?</td><td>25</td><td>18</td><td>229</td></tr></table>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | Class Interval | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | Total | Frequency | 12        | 30 | ? | 65 | ? | 25 | 18 | 229 |    |    |
| Class Interval                                                                                                                                                                                                                                                                                          | 10-20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 20-30                      | 30-40          | 40-50 | 50-60 | 60-70 | 70-80 | Total |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| Frequency                                                                                                                                                                                                                                                                                               | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 30                         | ?              | 65    | ?     | 25    | 18    | 229   |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| (B)                                                                                                                                                                                                                                                                                                     | Calculate the value of mode for the following frequency distribution:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| <table border="1"><tr><td>Interval</td><td>1-4</td><td>5-8</td><td>9-12</td><td>13-16</td><td>17-20</td><td>21-24</td><td>25-28</td><td>29-32</td><td>33-36</td></tr><tr><td>Frequency</td><td>2</td><td>5</td><td>8</td><td>9</td><td>12</td><td>14</td><td>14</td><td>15</td><td>13</td></tr></table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            | Interval       | 1-4   | 5-8   | 9-12  | 13-16 | 17-20 | 21-24 | 25-28 | 29-32 | 33-36     | Frequency | 2  | 5 | 8  | 9 | 12 | 14 | 14  | 15 | 13 |
| Interval                                                                                                                                                                                                                                                                                                | 1-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 5-8                        | 9-12           | 13-16 | 17-20 | 21-24 | 25-28 | 29-32 | 33-36 |       |       |           |           |    |   |    |   |    |    |     |    |    |
| Frequency                                                                                                                                                                                                                                                                                               | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5                          | 8              | 9     | 12    | 14    | 14    | 15    | 13    |       |       |           |           |    |   |    |   |    |    |     |    |    |
| <p style="text-align: center;"><b>(Section – E)</b></p> <p style="text-align: center;"><b>Section E consists of 3 case study-based questions of 4 marks each.</b></p>                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| 36.                                                                                                                                                                                                                                                                                                     | <p>The Olympic symbol comprising five interlocking rings represents the union of the five continents of the world and the meeting of athletes from all over the world at the Olympic games. In order to spread awareness about Olympic games, students of Class-X took part in various activities organised by the school. One such group of students made 5 circular rings in the school lawn with the help of ropes. Each circular ring required 44 m of rope.</p> <p>Also, in the shaded regions as shown in the figure, students made rangoli showcasing various sports and games. It is given that <math>\triangle OAB</math> is an equilateral triangle and all unshaded regions are congruent.</p> <div style="text-align: center;"></div> <p><b>Based on above information, answer the following questions:</b></p> <ol style="list-style-type: none"><li>Find the radius of each circular ring.</li><li>What is the measure of <math>\angle AOB</math>?</li><li>(a) Find the area of shaded region <math>R_1</math>.</li></ol> <p style="text-align: center;"><b>OR</b></p> <ol style="list-style-type: none"><li>(b) Find the length of rope around the unshaded regions.</li></ol> | <p>1</p> <p>1</p> <p>2</p> |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |
| 37.                                                                                                                                                                                                                                                                                                     | Cable cars at hill stations are one of the major tourist attractions. On a hill station, the length of cable car ride from base point to top most point on the hill is 5000 m.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                            |                |       |       |       |       |       |       |       |       |           |           |    |   |    |   |    |    |     |    |    |



|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|                   | <p>Poles are installed at equal intervals on the way to provide support to the cables on which car moves.</p> <p>The distance of first pole from base point is 200 m and subsequent poles are installed at equal interval of 150 m. Further, the distance of last pole from the top is 300 m.</p>  <p>Based on above information, answer the following questions using Arithmetic Progression :</p> <ol style="list-style-type: none"> <li>Find the distance of 10th pole from the base.</li> <li>Find the distance between 15th pole and 25th pole.</li> <li>(a) Find the time taken by cable car to reach 15th pole from the top if it is moving at the speed of 5 m/sec and coming from top.</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>(b) Find the total number of poles installed along the entire journey.</li> </ol>                                                                                                                                                                                                                                                                          | <p>1</p> <p>1</p> <p>2</p> |
| <p><b>38.</b></p> | <p>A drone was used to facilitate movement of an ambulance on the straight highway to a point P on the ground where there was an accident.</p> <p>The ambulance was travelling at the speed of 60 km/h. The drone stopped at a point Q, 100 m vertically above the point P. The angle of depression of the ambulance was found to be <math>30^\circ</math> at a particular instant.</p>  <p>Based on above information, answer the following questions :</p> <ol style="list-style-type: none"> <li>Represent the above situation with the help of a diagram.</li> <li>Find the distance between the ambulance and the site of accident (P) at the particular instant. (Use <math>\sqrt{3} = 1.73</math>)</li> <li>(a) Find the time (in seconds) in which the angle of depression changes from <math>30^\circ</math> to <math>45^\circ</math>.</li> </ol> <p><b>OR</b></p> <ol style="list-style-type: none"> <li>(b) How long (in seconds) will the ambulance take to reach point P from a point T on the highway such that angle of depression of the ambulance at T is <math>60^\circ</math> from the drone?</li> </ol> | <p>1</p> <p>1</p> <p>2</p> |

**MATHEMATICS STANDARD**  
**SAMPLE QUESTION PAPER 10**  
**CLASS – X (2025-26)**

**Maximum Marks: 80**

**Time: 3 hours**

**General Instructions:**

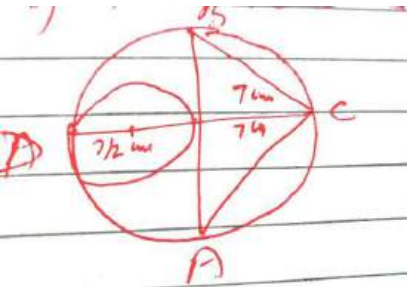
Read the following instructions carefully and follow them:

1. This question paper contains 38 questions. All Questions are compulsory.
2. This Question Paper is divided into 5 Sections A, B, C, D and E.
3. In Section A, Question numbers 1-18 are multiple choice questions (MCQs) and questions no. 19 and 20 are Assertion- Reason based questions of 1 mark each.
4. In Section B, Question numbers 21-25 are very short answer (VSA) type questions, carrying 02 marks each.
5. In Section C, Question numbers 26-31 are short answer (SA) type questions, carrying 03 marks each.
6. In Section D, Question numbers 32-35 are long answer (LA) type questions, carrying 05 marks each.
7. In Section E, Question numbers 36-38 are case study-based questions carrying 4 marks each with sub parts of the values of 1, 1 and 2 marks each respectively.
8. There is no overall choice. However, an internal choice in 2 questions of Section B, 2 questions of Section C and 2 questions of Section D has been provided. An internal choice has been provided in all the 2 marks questions of Section E.
9. Draw neat and clean figures wherever required. Take  $\pi = 22/7$
10. Use of calculators is not allowed.

| <b>(Section A)</b><br><b>Section A consists of 20 questions of 1 mark each.</b> |                                                                                                                                                                     |              |
|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Q.No.</b>                                                                    | <b>Questions</b>                                                                                                                                                    | <b>Marks</b> |
| <b>1.</b>                                                                       | 3.27 is<br>(A) an integer (B) a rational number<br>(C) a natural number (D) an irrational number                                                                    | <b>1</b>     |
| <b>2.</b>                                                                       | The co-ordinate of the fourth vertex of the rectangle formed by the points (0,0), (2,0), (0,3) are<br>(A) (3,0) (B) (0,2) (C) (2,3) (D) (3,2)                       | <b>1</b>     |
| <b>3.</b>                                                                       | A system of simultaneous linear equations is said to be consistent, if it has<br>(A) At least one solution (B) Many solutions<br>(C) No solution (D) None of these  | <b>1</b>     |
| <b>4.</b>                                                                       | A quadrilateral ABCD is drawn to circumscribe a circle. If BC = 3.5 cm, CD = 2 cm and AD = 1.5 cm, then the length AB is<br>(A) 1.5 cm (B) 2 cm (C) 3 cm (D) 3.5 cm | <b>1</b>     |
| <b>5.</b>                                                                       | If $\tan 30^\circ = (\sin 45^\circ \times \cos 45^\circ + \sin 30^\circ)$ , then value of x is<br>(A) $15^\circ$ (B) $30^\circ$ (C) $45^\circ$ (D) $60^\circ$       | <b>1</b>     |

|     |                                                                                                                                                                                  |   |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 6.  | If one root of the equation $x^2 + 4x + 3 = 0$ is 1, then its other root is<br>(A) -3 (B) -2 (C) 2 (D) -1                                                                        | 1 |
| 7.  | If radii of two concentric circles are 4 cm and 5 cm, then the length of chord of one circle which is tangent to the other circle is<br>(A) 3 cm (B) 6 cm (C) 9 cm (D) 1 cm      | 1 |
| 8.  | If a card is drawn from a deck of 52 cards, what is the probability of getting a king or a queen?<br>(A) $\frac{1}{13}$ (B) $\frac{1}{26}$ (C) $\frac{7}{13}$ (D) $\frac{7}{26}$ | 1 |
| 9.  | The value of $(\tan 25^\circ \times \tan 40^\circ \times \tan 65^\circ)$ is<br>(A) $\sqrt{3}$ (B) $-\sqrt{12}$ (C) $\sqrt{13}$ (D) $-\sqrt{3}$                                   | 1 |
| 10. | If $\alpha, \beta$ are the zeros of the polynomial $2x^2 + x + 1$ , then $\alpha + \beta =$<br>(A) -1 (B) -2 (C) 0 (D) 2                                                         | 1 |
| 11. | The curved surface area of a cylinder is $264 \text{ m}^2$ and its volume is $924 \text{ m}^3$ . The ratio of its diameter to its height is<br>(A) 3:7 (B) 7:3 (C) 6:9 (D) 7:11  | 1 |
| 12. | If $y = 1$ is a common root of the equations $ay^2 + ay + 3 = 0$ and $y^2 + y + b = 0$ , then $a + b =$<br>(A) -3 (B) $-\frac{7}{2}$ (C) 6 (D) 13                                | 1 |
| 13. | If the first term of an A.P. is $a$ and $n$ th term is $b$ , then common difference is<br>(A) $(b - a)/n$ (B) $b/n$ (C) $(b - a)/(n - 1)$ (D) $(a - b)/n$                        | 1 |
| 14. | In an isosceles triangle ABC, if $AB = AC = 25 \text{ cm}$ and $BC = 14 \text{ cm}$ , the measure of altitude from A to BC is<br>(A) 20 cm (B) 22 cm (C) 18 cm (D) 24 cm         | 1 |
| 15. | A dice is rolled twice. Find the probability that 5 will not come up either time.<br>(A) $\frac{25}{36}$ (B) $\frac{11}{36}$ (C) $\frac{7}{36}$ (D) $\frac{1}{36}$               | 1 |
| 16. | The value of $(x)$ when the distance between the points $(3, a)$ and $(4, 1)$ is 10:<br>(A) (-1,2) (B) (2, 3) (C) (4,3) (D) (4, -2)                                              | 1 |
| 17. | If $u_i = (x_i - 25)/10$ , $\sum u_i = 20$ , $\sum f = 100$ then $x =$<br>(A) 23 (B) 24 (C) 27 (D) 25                                                                            | 1 |
| 18. | If the angle of elevation of a tower from a distance of 100 metres from its foot is $60^\circ$ , then the height of the tower is                                                 | 1 |

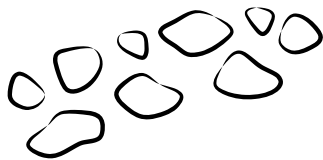
|                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|                                                                                                                                                      | (A) $100\sqrt{3}$ (B) $\frac{100}{\sqrt{3}}$ (C) $50\sqrt{3}$ (D) $200\sqrt{3}$                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
|                                                                                                                                                      | <p><b>DIRECTIONS:</b> In the question number 19 and 20, a statement of <b>Assertion (A)</b> is followed by a statement of <b>Reason (R)</b>.</p> <p><b>Choose the correct option:</b></p> <p>(A) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)</p> <p>(B) Both assertion (A) and reason (R) are true and reason (R) is not the explanation of assertion (A)</p> <p>(C) Assertion (A) is true but reason (R) is false.</p> <p>(D) Assertion (A) is false but reason (R) is true.</p> |   |
| 19.                                                                                                                                                  | <p><b>Assertion(A):</b> If <math>x = 2 \sin^2\theta</math> and <math>y = 2 \cos^2\theta + 1</math>, then value of <math>x + y = 3</math></p> <p><b>Reason(R):</b> For any value of <math>\theta</math>, <math>\sin^2\theta + \cos^2\theta = 1</math></p>                                                                                                                                                                                                                                                                                    | 1 |
| 20.                                                                                                                                                  | <p><b>Assertion(A):</b> when a positive integer 'a' is divided by 3, the values of remainder can be 0, 1, or 2</p> <p><b>Reason(R):</b> According to Euclid's Division Lemma <math>a = bq + r</math>, where <math>0 \leq r &lt; b</math> and <math>r</math> is an integer.</p>                                                                                                                                                                                                                                                              | 1 |
| <p style="text-align: center;"><b>(Section – B)</b></p> <p style="text-align: center;"><b>Section B consists of 5 questions of 2 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |   |
| 21.(a)                                                                                                                                               | <p>The first three terms of an A.P. respectively are <math>3y - 1</math>, <math>3y + 5</math> and <math>5y + 1</math>. Then find the value of <math>y</math>.</p> <p style="text-align: center;"><b>OR</b></p>                                                                                                                                                                                                                                                                                                                              | 2 |
| (b)                                                                                                                                                  | <p>The sum of <math>n</math> terms of three arithmetic progressions are <math>7n</math>, <math>9n</math> and <math>5n</math>. The first term of each is unity and the common differences are 1, 2 and 3 respectively. Find that <math>n</math> if <math>t_5 = 25</math>.</p>                                                                                                                                                                                                                                                                |   |
| 22.                                                                                                                                                  | <p>Evaluate:</p> $\frac{\cos 70^\circ}{\sin 20^\circ} + \frac{\cos 55^\circ \csc 35^\circ}{\tan 5^\circ \tan 25^\circ \tan 85^\circ \tan 65^\circ \tan 45^\circ}$                                                                                                                                                                                                                                                                                                                                                                           | 2 |
| 23.                                                                                                                                                  | <p>In <math>\triangle ABC</math>, D and E are mid-points of AB and AC respectively. Find the ratio of the areas of <math>\triangle ADE</math> and <math>\triangle ABC</math>.</p>                                                                                                                                                                                                                                                                                                                                                           | 2 |
| 24.                                                                                                                                                  | <p>(a) AB and CD are respectively arcs of two concentric circles of radii 21 cm and 7 cm, and centre O. If <math>\angle AOB = 30^\circ</math>, find the area of the shaded region.</p> <p style="text-align: center;"><b>OR</b></p>                                                                                                                                                                                                                                                                                                         | 2 |

|                                                                                                                                                      |                                                                                                                                                                                                                                                                                                  |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| (b)                                                                                                                                                  | <p>AB and CD are two diameters of a circle with centre O, perpendicular to each other, and CD is the diameter of the smaller circle.</p> <p>If OA = 7 cm, find the area of the shaded region.</p>              |   |
| 25.                                                                                                                                                  | <p>A cylindrical vessel with internal diameter 10 cm and height 10.5 cm is full of water. A solid cone of base diameter 7 cm and height 6 cm is completely immersed in water.</p> <p>Find the volume of water left in the cylinder.</p>                                                          | 2 |
| <p style="text-align: center;"><b>(Section – C)</b></p> <p style="text-align: center;"><b>Section C consists of 6 questions of 3 marks each.</b></p> |                                                                                                                                                                                                                                                                                                  |   |
| 26.                                                                                                                                                  | <p>Prove that in a triangle, if the square of one side is equal to the sum of the squares of the other two sides, then the angle opposite the side is a right angle.</p>                                                                                                                         | 3 |
| 27.                                                                                                                                                  | <p>On a morning walk, three persons step out together and their steps measure 30 cm, 36 cm and 40 cm respectively.</p> <p>What is the minimum distance each should walk so that each can cover the same distance in complete steps?</p>                                                          | 3 |
| 28.                                                                                                                                                  | <p>Solve for x:</p> $x^2 - (\sqrt{3} + 1)x + \sqrt{3} = 0$ <p>Also verify the relationship between the zeros and coefficients of the polynomial.</p>                                                                                                                                             | 3 |
| 29.<br>(A)                                                                                                                                           | <p>Prove that</p> $(1 + \cot \theta - \operatorname{cosec} \theta)(1 + \tan \theta + \sec \theta) = 2$ <p style="text-align: center;"><b>OR</b></p> <p>Prove that</p> $\sin^6 A + \cos^6 A = 1 - 3\sin^2 A \cos^2 \theta$                                                                        | 3 |
| 30.                                                                                                                                                  | <p>A game consists of tossing a one-rupee coin 3 times and noting its outcome each time. Aryan wins if all the tosses give the same result (i.e., three heads or three tails) and loses otherwise.</p> <p>Find the probability that Aryan will lose the game.</p>                                | 3 |
| 31.<br>(A)                                                                                                                                           | <p>On selling a tea-set at 5% loss and lemon-set at 15% gain, a crockery seller gains ₹7.</p> <p>If he sells the tea-set at 5% gain and the lemon-set at 10% gain, he gains ₹13.</p> <p>Find the actual price of the tea-set and the lemon-set.</p> <p style="text-align: center;"><b>OR</b></p> | 3 |

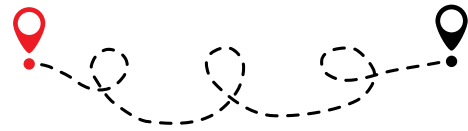


|                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|---------|---------|-------|-------|-------|-------|-----------|---|---|---|---|----|----|----|----|----|----|------------------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|----|----|----|----|----|----|----|---|---|
| (B)                                                                                                                                    | Solve graphically and find the area of the triangle formed by the lines:<br>$2x + y = 6$ $2x - y + 2 = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| <p style="text-align: center;"><b>(Section – D)</b><br/><b>Section D consists of 4 questions of 5 marks each</b></p>                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| 32.                                                                                                                                    | A person rowing at the rate of 6 km/hr in still water, takes thrice as much time in going 40 km upstream as in going 40 km downstream.<br>Find the speed of the stream.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5       |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| 33.<br>(A)                                                                                                                             | Prove that two triangles are said to be equiangular, if their corresponding angles are equal.<br><br><p style="text-align: center;"><b>OR</b></p><br>(B) E is a point on side AD produced of a parallelogram ABCD and BE intersects CD at F.<br>Prove that $\triangle ABE \cong \triangle CFB$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5       |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| 34.(A)                                                                                                                                 | ABC is a quadrant of a circle of radius 14 cm. With AC as diameter, a semi-circle is drawn.<br>Find the area of the shaded portion.<br><br><p style="text-align: center;"><b>OR</b></p><br>(B) A cone made up of paper has height 3h and vertical angle 2x.<br>It contains two other cones of height 2h and h and vertical angles 4x and 6x respectively.<br>Find the ratio of the two volumes in between the cones.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5       |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| 35.(A)                                                                                                                                 | Calculate the value of mode for the following frequency distribution: <table border="1"><tr><td>Class</td><td>1-4</td><td>5-8</td><td>9-12</td><td>13-16</td><td>17-20</td><td>21-24</td><td>25-28</td><td>29-32</td><td>33-36</td><td>37-40</td></tr><tr><td>Frequency</td><td>2</td><td>5</td><td>8</td><td>9</td><td>12</td><td>14</td><td>14</td><td>15</td><td>11</td><td>13</td></tr></table><br>(B) The following table gives the distribution of total household expenditure (in rupees) of manual workers in a city... <table border="1"><tr><td>Expenditure in ₹</td><td>100-150</td><td>150-200</td><td>200-250</td><td>250-300</td><td>300-350</td><td>350-400</td><td>400-450</td><td>450-500</td></tr><tr><td>frequency</td><td>24</td><td>40</td><td>33</td><td>28</td><td>30</td><td>22</td><td>16</td><td>7</td></tr></table><br>Find the average Expenditure (in ₹) per household | Class   | 1-4     | 5-8     | 9-12    | 13-16   | 17-20   | 21-24   | 25-28 | 29-32 | 33-36 | 37-40 | Frequency | 2 | 5 | 8 | 9 | 12 | 14 | 14 | 15 | 11 | 13 | Expenditure in ₹ | 100-150 | 150-200 | 200-250 | 250-300 | 300-350 | 350-400 | 400-450 | 450-500 | frequency | 24 | 40 | 33 | 28 | 30 | 22 | 16 | 7 | 5 |
| Class                                                                                                                                  | 1-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5-8     | 9-12    | 13-16   | 17-20   | 21-24   | 25-28   | 29-32   | 33-36 | 37-40 |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| Frequency                                                                                                                              | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5       | 8       | 9       | 12      | 14      | 14      | 15      | 11    | 13    |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| Expenditure in ₹                                                                                                                       | 100-150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 150-200 | 200-250 | 250-300 | 300-350 | 350-400 | 400-450 | 450-500 |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| frequency                                                                                                                              | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 40      | 33      | 28      | 30      | 22      | 16      | 7       |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| <p style="text-align: center;"><b>(Section – E)</b><br/><b>Section E consists of 3 case study-based questions of 4 marks each.</b></p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |
| 36.                                                                                                                                    | To inculcate the good habit of savings in her children, Reema brought a piggy bank and after putting a ₹10 coin in it, she handed it over to her daughter Amisha and asked as to put money in it from her pocket money at the beginning of every week. Amisha put two ten rupee coins at the beginning of next (second) week and in this way increases her savings by one ₹10 coin every week.<br>Based on the above, answer the following questions:<br>a. How many coins were added in the piggy bank at the beginning of 5th week?                                                                                                                                                                                                                                                                                                                                                               | 1       |         |         |         |         |         |         |       |       |       |       |           |   |   |   |   |    |    |    |    |    |    |                  |         |         |         |         |         |         |         |         |           |    |    |    |    |    |    |    |   |   |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                 |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
|            | <p>b. How many ₹10 coins will be there in the piggy bank after the end of 7 weeks?</p> <p>c. (i) If the piggy bank can hold a maximum of 300 ₹10 coins, after how many weeks it would be full?<br/>OR<br/>(ii) Find the total amount of money in the piggy bank at the end of 20 weeks.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><b>1</b></p> <p><b>2</b></p>                 |
| <b>37.</b> | <p>To make the teaching-learning process easier, creative and innovative, a teacher brings clay in the classroom to teach the topic of mensuration. She forms a cylinder of radius 2.1 cm and height 5 cm with the clay and put a hemisphere of same radius on its top in such a way that the base of hemisphere covers the top of cylinder.</p> <p>Using the above information, and <math>\pi = 22/7</math>, find:</p> <p>a. The volume of cylinder so formed.</p> <p>b. The volume of hemispherical part.</p> <p>c. (i) The surface area of the complete solid.<br/>OR<br/>(ii) The curved surface area of the cylindrical part, if hemisphere is not put on it.</p>                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>1</b></p> <p><b>1</b></p> <p><b>2</b></p> |
| <b>38.</b> | <p>Clinometer is a tool that is used to measure the angle of elevation. We can use the clinometer to measure the height of tall things that you can't possibly reach. With the help of a clinometer, Harish measured the angle of elevation of the roof of a building from a point P on the ground as <math>45^\circ</math>. On the same wall, at some height below the top, there was a society logo, whose angle of elevation from the same point P was measured as <math>30^\circ</math>. The point P is at a distance of 24 m from the base of the building. Based on the above information, answer the following questions:</p> <p>a. (i) What is the height of the building logo from the ground?<br/>OR<br/>(ii) What is the height of the building from the ground?</p> <p>b. What is the aerial (slant) distance of point P from the top of the building?</p> <p>c. If <math>\theta</math> is the angle of elevation of the top of building when the point P is moved 9 m towards the base of the building, then find <math>\tan \theta</math>.</p> | <p><b>1</b></p> <p><b>1</b></p> <p><b>2</b></p> |



# PATH



## PATH – Preksha's Talent Hunt & Entrance Examination

A Gateway to Academic Excellence

PATH (Preksha's Talent Hunt & Entrance Examination) is a prestigious scholarship cum admission test designed to identify and nurture young academic talent. Every year, thousands of students participate and compete for scholarships, fee waivers, and admission benefits.

### EXAM Pattern

- Total Questions: 60
- Total Marks: 240
- Duration: 60 Minutes
- Negative Marking: No Negative Marking
- Mode: Offline



### Who Can Apply?

- Students studying in Class 6th to 11th
- Open to students from all schools and boards
- Ideal for students aiming for academic excellence with financial support

### Scholarship Benefits

Students are awarded scholarships based on their Rank:

- Rank 1 – 100% Tuition Fee, Admission Fee & Registration Fee Waiver
- Top 2–10 Ranks – Up to 100% Tuition Fee Waiver
- Top 11–200 Ranks – Tuition Fee Waiver from 90% to 60%

### Subjects & Assessment

- Mental Ability
- Mathematics
- Science
- Logical & Analytical Thinking

(Syllabus aligned with respective class level)

### Growing Trust, Growing Participation

- 2025: 5117 students appeared
- 2024: 2000+ students appeared



*"More than an exam, PATH is a platform to recognize potential, reward merit, and shape future achievers."*



# PATH RESULTS & EXAM GLIMPSES

5117+ Students Appeared  
PATH 2025

3000+ Students Appeared  
PATH 2024

Top 200 Scholarship Holders  
Up to 100% Fee Waiver



## Scholarship and Cash Price Distribution



## PATH Exam Day Glimpses



"PATH – Preksha Talent Hunt & Entrance Examination Building Academic Excellence  
Year After Year"



# OUR ACADEMIC RESULTS

*Proven Results. Consistent Success. Academic Excellence.*



**PRATHAM**  
RECENTLY CLEARED  
SAINIK SCHOOL EXAM 2025



**MUNISH**  
B.TECH CSE  
NIT ALLAHABAAD



**ANNIRUDH**  
MBBS  
AIIMS BATHINDA



**VISHAL CHOUDHARY**  
JEE MAIN 2025  
QUALIFIED

## OLYMPIAD QUALIFIERS 2024-25



## BOARD TOPPERS 2024-25



## OLYMPIAD QUALIFIERS 2025-26



### Class 12th Stars



### Class 10th Stars



### Class 8th Stars



### Class 11th Stars



**Every topper once started as a learner.  
With the right guidance, discipline, and  
determination –  
your success story can begin here.**

**Your Name Can Be Here  
Your Photo Can Be Here**





"Congratulations to all our shining stars! May your success inspire others and light the way for future generations. Let's shine together and achieve even greater heights!"



**Munish**  
NIT Allahabaad



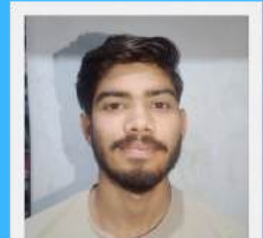
**Annirudh**  
AIIMS Bathinda



**Arun Saini**  
GMC Amritsar



**Srijana Mahajan**  
GMC Jammu



**Vishal Choudhary**  
Jee main Qualified

### Our Olympiads qualifiers



### Class 12<sup>th</sup> & 10<sup>th</sup> Board Result 2025



### Your Dreams, Our Guidance"

#### PATH 2025 Cash Award Winners



#### Sainik School Qualifier



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