



**Series YZ2XZ/4/2  
2024**

रोल नं.  
Roll No.

प्रश्न-पत्र कोड  
Q.P. Code **30/2/1**

परीक्षार्थी प्रश्न-पत्र कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें।

Candidates must write the Q.P. Code on the title page of the answer-book.

## गणित (मानक) - सैद्धान्तिक MATHEMATICS (STANDARD) - Theory

निर्धारित समय : 3 घण्टे

Time allowed: 3 Hours

अधिकतम अंक : 80

Maximum Marks: 80

### नोट / NOTE :

(i) कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ 12 हैं।

*Please check that this question paper contains 12 printed pages.*

(ii) प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को छात्र उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें।

*Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.*

(iii) कृपया जाँच कर लें कि इस प्रश्न-पत्र में 38 प्रश्न हैं।

*Please check that this question paper contains 38 questions.*

(iv) कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें।

*Please write down the Serial Number of the question in the answer-book before attempting it.*

(v) इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है। प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा। 10.15 बजे से 10.30 बजे तक छात्र केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे।

*15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the students will read the question paper only and will not write any answer on the answer-book during this period.*

**NOTE:** This is Educart provided Mock Set to help students experience the exam pattern beforehand.

### GENERAL INSTRUCTIONS:

**Read the following instructions carefully and follow them:**

(i) This question paper consists of 38 questions. All questions are compulsory.

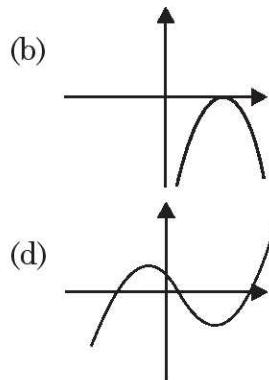
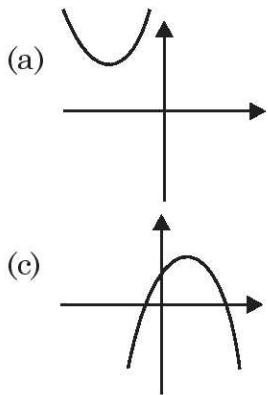
(ii) Question Paper is divided into FIVE sections—**Section A, B, C, D and E**.



- (iii) In **Section A** – question number **1** to **18** are multiple choice questions (MCQs) and question number **19** and **20** are Assertion-Reason based questions of **1** mark each.
  - (iv) In **Section B** – question number **21** to **25** are Very Short Answer (VSA) type questions of **2** marks each.
  - (v) In **Section C** – question number **26** to **31** are Short Answer (SA) type questions carrying **3** marks each.
  - (vi) **Section D** – question number **32** to **35** are Long Answer (LA) type questions carrying **5** marks each.
  - (vii) **Section E** – question number **36** to **38** are **case based integrated units** of assessment questions carrying **4** marks each. Internal choice is provided in 2 marks question in each case-study.
  - (viii) There is no overall choice. However, an internal choice has been provided in 2 questions in **Section B**, 2 questions in **Section C**, 2 questions in **Section D** and 3 questions in **Section E**.
  - (ix) Draw neat figures wherever required. Take  $\pi = 22/7$  where required if not stated.
  - (x) Use of calculators in **NOT allowed**.

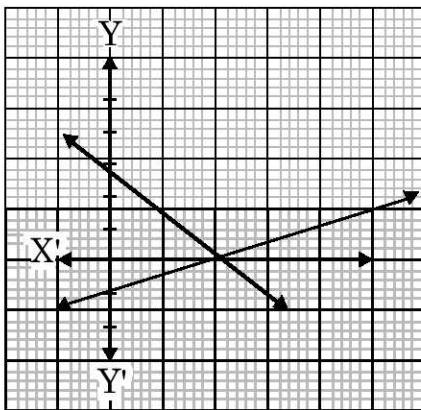
## **SECTION - A**

**Section - A consists of Multiple Choice type questions of 1 mark each.**



3. The given pair of linear equations are intersecting as shown in graph. So, which of the following condition is true?





- (a) consistent, one solution  
 (c) consistent, no solution

- (b) consistent, many solutions  
 (d) inconsistent, many solutions

1

4. If 1 is a common root of  $ax^2 + ax + 2 = 0$  and  $x^2 + x + b = 0$ , then  $a : b$  is:

- (a) 1 : 2  
 (c) 1 : 4
- (b) 2 : 1  
 (d) 4 : 1

1

5. The next term of the AP:  $\sqrt{8}, \sqrt{18}, \sqrt{32}, \dots$  is:

- (a)  $\sqrt{65}$   
 (c)  $\sqrt{50}$
- (b)  $\sqrt{60}$   
 (d)  $\sqrt{55}$

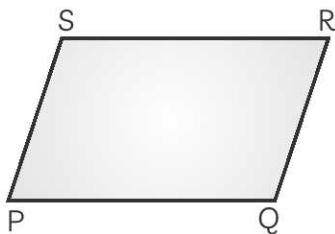
1

6. The 4<sup>th</sup> term from the end of the AP: -10, -8, -6, ..... 48 is:

- (a) 37  
 (c) 43
- (b) 42  
 (d) 58

1

7. 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:



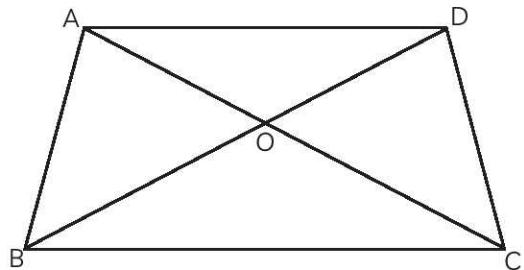
- (a) (-2, -1)  
 (c) (2, -1)
- (b) (-2, -3)  
 (d) (1, 2)

1

8. Sunaina has a trapezium shaped purse ABCD where  $AD \parallel BC$  and  $AD = 4\text{cm}$ .

If the diagonals AC and BD intersect each other at O such that  $\frac{AO}{OC} = \frac{DO}{OB} = \frac{1}{2}$ , then the length of BC part is:

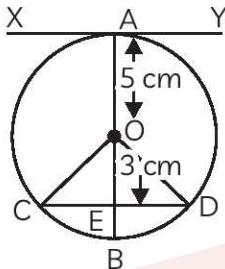







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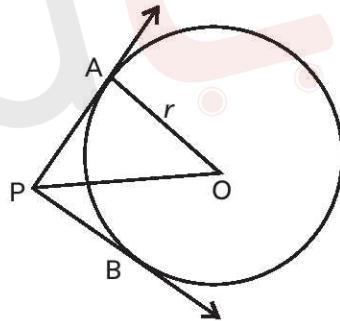
9. A tangent, marked XAY, is drawn to a circle with a diameter of AB with radius 5 cm. The length of the chord CD parallel to XY and at a distance 8 cm from A, is:






1

- 10.** In the figure,  $\angle APB = 90^\circ$ . The length of OP is:






1

11. Shown below is a solved trigonometric problem.

$$\frac{\sin^3 \theta + \cos^3 \theta}{\sin \theta + \cos \theta} = \frac{(\sin \theta + \cos \theta)(\sin^2 \theta + \cos^2 \theta - \sin \theta \cos \theta)}{(\sin \theta + \cos \theta)} \quad (\text{Step 1})$$

$$= \sin^2 \theta + \cos^2 \theta - \sin \theta \cos \theta \quad (\text{Step 2})$$

$$= (\sin \theta + \cos \theta)^2 \quad (\text{Step 3})$$

In which step is there an error in solving?



1



**12.** If  $\operatorname{cosec} A - \cot A = 13$ , then the value of  $\operatorname{cosec} A + \cot A$  is:

- (a)  $\frac{1}{12}$       (b)  $\frac{2}{13}$   
 (c)  $\frac{1}{14}$       (d)  $\frac{1}{13}$

1

13. The angle of elevation of the top of a tower at a point on the ground 40 m away from the foot of the tower is  $45^\circ$ . Then the height of the tower (in metres) is:

- (a)  $\frac{50}{\sqrt{2}} \text{ m}$       (b)  $\frac{50}{\sqrt{3}} \text{ m}$   
 (c)  $50\sqrt{3} \text{ m}$       (d)  $40 \text{ m}$

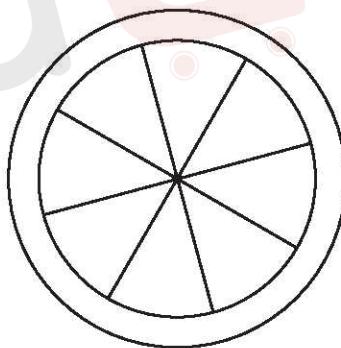
1

14. What is the relation between the area of a circle and square, if the circumference of a circle and the perimeter of a square are equal.

- (a) Area of the circle = Area of the square
  - (b) Area of the circle < Area of the square
  - (c) Area of the circle > Area of the square
  - (d) Nothing can be said about the relation between the areas of the circle and the square.

1

**15.** Rohan is a very notorious kid, who likes to play a lot with the wheels, one day he thought of calculating the number of revolutions made by it.



If the radius of wheel is 0.25 m, then the number of revolutions made by the wheel in rolling a distance of 11 km is:



1

**16.** Seema purchased a lottery ticket. She was very curious to know her winning chances. The probability of her winning the first prize in a lottery is 0.08. If 6000 tickets are sold, how many tickets has she bought?



1

- 18.** In the following distribution:

Marks obtained	Number of students
More than or equal to 0	63
More than or equal to 10	58
More than or equal to 20	55
More than or equal to 30	51
More than or equal to 40	48
More than or equal to 50	42

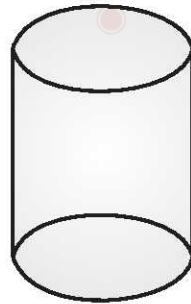
The frequency of the class 30 – 40 is:



1

**DIRECTIONS :** In the question number **19** and **20**, a statement of **Assertion (A)** is followed by a statement of **Reason (R)**. Choose the correct option out of the following:

- 19. Assertion (A) :** In a circular drum of radius 4.2 m and height 3.5 m, the number of full bags of wheat that can be emptied, if the space required for wheat in each bag is 2.1 cu. m, is nearly 92 bags.



**Reason (R) :** Volume of circular drum is  $\frac{1}{2}\pi r^2 h$  where  $r$  is radius and  $h$  is height of drum.

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
  - (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A)
  - (c) Assertion (A) is true but Reason (R) is false.
  - (d) Assertion (A) is false but Reason (R) is true.

**20. Assertion (A) :** If  $k = \frac{1}{2}$ , then the points  $(k, 2 - 2k)$ ,  $(-k + 1, 2k)$  and  $(-4 - k, 6 - 2k)$  are collinear.

**Reason (R) :** Three points P, Q and R are collinear in the same straight line if  $PQ + QR = PR$ .

- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
- (b) Both Assertion (A) and Reason (R) are true and Reason (R) is not the correct explanation of Assertion (A)
- (c) Assertion (A) is true but Reason (R) is false.
- (d) Assertion (A) is false but Reason (R) is true.

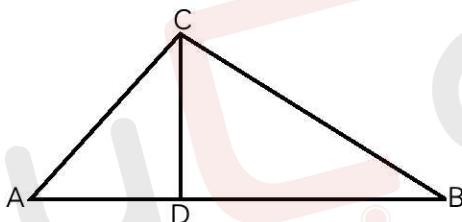
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## SECTION - B

**Section - B consists of Very Short Answer (VSA) type questions of 2 marks each.**

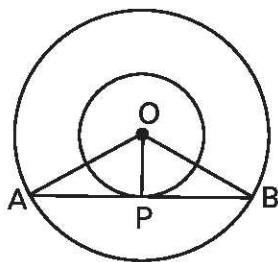
**21.** Prove that  $\sqrt{11}$  is an irrational number. 2

**22.** In the given figure, if  $\angle ACB = \angle CDA$ ,  $AC = 8 \text{ cm}$  and  $AD = 3 \text{ cm}$ , then find  $BD$ .



2

**23.** State true or false. If in two concentric circles, a chord AB of the outer circle is a tangent to the inner circle at P, then P is the mid-point of AB.



2

**24. (A)** If  $\sin(A + B) = 1$  and  $\cos(A - B) = \frac{\sqrt{3}}{2}$ ,  $0^\circ < A + B \leq 90^\circ$  and  $A > B$ , then find the measures of angles A and B. 2

OR

**(B)** Find an acute angle  $\theta$  when

$$\frac{\cos \theta - \sin \theta}{\cos \theta + \sin \theta} = \frac{1 - \sqrt{3}}{1 + \sqrt{3}}$$

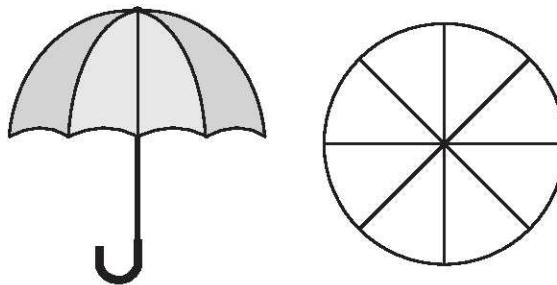
2



25. (A) Two circles with radii of 20 cm and 7 cm, respectively. Find the radius of the circle whose circumference equals the sum of the circumference of the two circles. 2

OR

- (B) Roshni has an umbrella that has 8 ribs which are equally spaced. Assuming umbrella to be a flat circle of radius 45 cm, find the area between the two consecutive ribs of the umbrella.



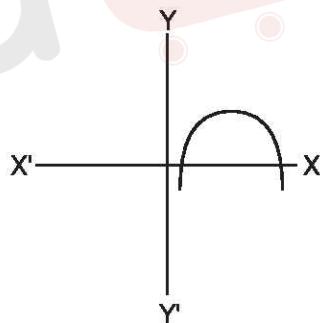
2

### SECTION - C

Section - C consists of Short Answer (SA) type questions of 3 marks each.

26. Classroom P has 12 benches, Q has 18 benches and R has 24 benches. In each classroom, the benches are arranged in rows with the same number of benches in each row. What is greatest possible number of benches in each row in the three classrooms? 3

27. Ayush while skating in a ground, magically forms a parabolic graph as shown below in the graph.



The above graph is represented by a quadratic polynomial where zeroes are in the ratio 2 : 3 and their sum is 27. Find the product of these zeroes. 3

28. (A) 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. 3

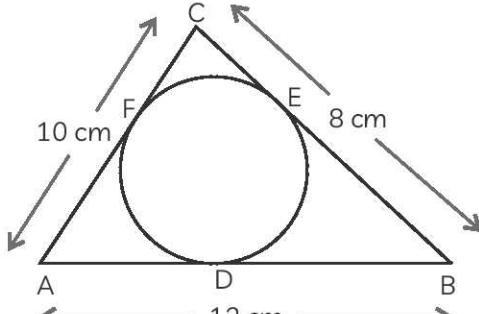
OR

- (B) 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. 3

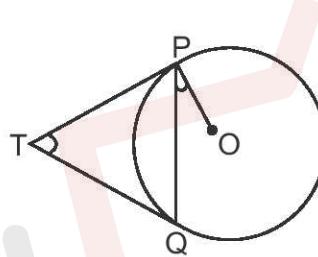
29. (A) A circle is inscribed in a  $\triangle ABC$  having sides 8 cm, 10 cm and 12 cm as shown in the figure. Find AD, BE and CF.



3

**OR**

- (B) Two tangents TP and TQ are drawn to a circle with centre O from an external point T. Prove that  $\angle PTQ = 2\angle OPQ$ .



3

30. Prove the following:

$$\frac{\tan^3 \theta + \cot^3 \theta}{1 + \tan^2 \theta \cdot 1 + \cot^2 \theta} = \sec \theta \cosec \theta - 2 \sin \theta$$

3

31. Find the mean and median of the following data:

Age (in years)	less than 10	less than 20	less than 30	less than 40	less than 50	
Frequency	5	15	20	24	30	3

## SECTION - D

**Section - D consists of Long Answer (LA) type questions of 5 marks each.**

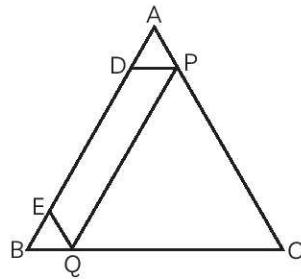
32. (A) In a flight of 600 km, an aeroplane was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/h and the time of flight increased by 30 minutes. Find the original duration of the flight. 5

**OR**

- (B) A motor boat whose speed in still water is 15 km/h. It can go 30 km upstream and return downstream to the original point in 4 hours 30 minutes. Find the speed of the stream. 5



33. In the figure, ABC is a triangle and D and E are two points on side AB such that  $AD = BE$ . If  $DP \parallel BC$  and  $EQ \parallel AC$ , then prove that  $PQ \parallel AB$ .



5

34. (A) 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 2.1 m. If the canvas used to make the tents costs ₹ 120 per  $m^2$ , find the amount shared by each school to set up the tents.

5

OR

- (B) 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. Find:
- the ratio of the total surface area of the two new solid formed
  - volume of each new solid formed.

5

35. The severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2) is the primary cause of the continuing COVID-19 pandemic, sometimes referred to as the coronavirus pandemic. The age distribution of patients admitted to the hospital for a given day is shown in the following table.

Find the median for the following table.

Class	Frequency
Less than 20	0
Less than 30	4
Less than 40	16
Less than 50	30
Less than 60	46
Less than 70	66
Less than 80	82
Less than 90	92
Less than 100	100

5

30/2/1

10



## SECTION - E

**Section - E consists of three Case Study Based questions of 4 marks each.**

36. In a school examination hall, the teacher makes students sit in such a way that no students can cheat from other student. So, the teacher decides to mark the numbers on each chair from 1, 2, 3,.....If there are 26 students and each student is seated at alternate position in examination hall such that the sequence formed is 1, 3, 5.



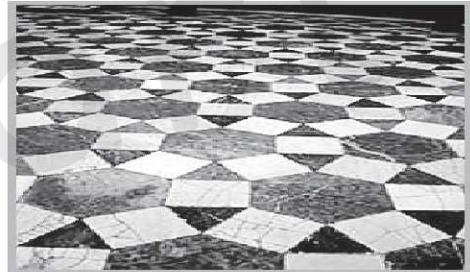
Based on the above information, answer the following questions:

- (i) Find the common difference between two seats. 1
- (ii) What type of sequence is formed, to follow the seating arrangement of students in the examination hall? 1
- (iii) (a) Find the seat number of the last student in the examination hall. 2

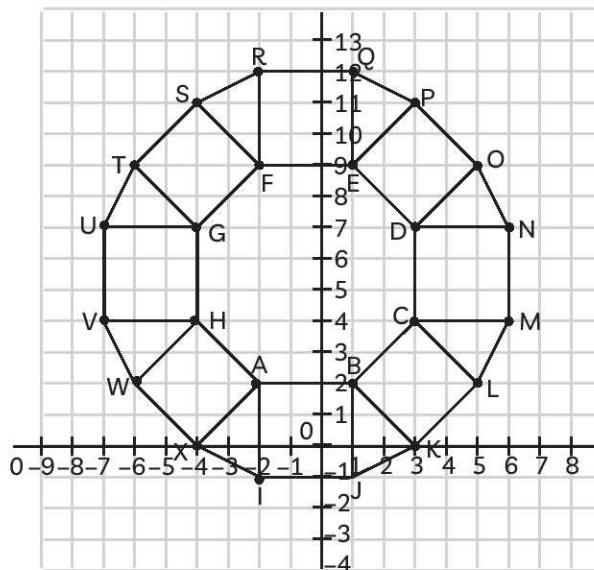
**OR**

- (b) Find the seat number of 10<sup>th</sup> vacant seat in the examination hall. 2

37. 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



Based on the above information, answer the following questions:

- (i) What is the length of the line segment joining points B and F? 1  
(ii) 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? 1  
(iii)(a) What are the coordinates of the point on y-axis equidistant from A and G? 2

**OR**

- (b) What is the area of trapezium AFGH? 2

38. On a field trip, a group of Class X students went to India Gate. History piqued the interest of both the students and the teacher. The teacher described India Gate, a huge sandstone arch in New Delhi dedicated to the British Indian soldiers who lost their lives in conflicts fought between 1914 and 1919 and known officially as Delhi Memorial. India Gate, which is situated at the eastern end of the Rajpath (formerly known as the Kingsway), is around 138 feet (42 m) tall, according to the teacher.



Based on the above information, answer the following questions:

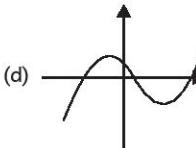
- (i) (a) What is the angle of elevation of the top of the monument if they are standing at a distance of 42 m away from the monument? 2  
**OR**  
(b) If they want to see the top of the monument with an angle of elevation of  $60^\circ$ , at what distance from the monument they should stand? 2
- (ii) If the altitude of the Sun is  $60^\circ$ , then what is the height of the vertical tower that will cast a shadow of length 20 m? 1
- (iii) If the ratio of the height of a pole to the length of its shadow is  $1 : 1$ , then what is the angle of elevation of the Sun? 1



# MARKING SCHEME CHART

to evaluate your final marks

**Mathematics (Standard); Set-2; QP Code: 30/2/1**

Question	Marks (Type)	Topic (Chapter Name)	Full Marks (Breakdown)	Your Performance
<b>Q1</b>	1m (MCQ)	LCM and HCF (Real Numbers)	(c) 35	<input type="checkbox"/> 1
<b>Q2</b>	1m (MCQ)	Graphical Method (Polynomials)	(d) 	<input type="checkbox"/> 1
<b>Q3</b>	1m (MCQ)	Graphical Method (Pair of Linear Equations in Two Variables)	(a) consistent, one solution	<input type="checkbox"/> 1
<b>Q4</b>	1m (MCQ)	Roots of a Quadratic Equation (Quadratic Equations)	(a) 1 : 2	<input type="checkbox"/> 1
<b>Q5</b>	1m (MCQ)	Arithmetic Progression and its related terms (Arithmetic Progression)	(c) $\sqrt{50}$	<input type="checkbox"/> 1
<b>Q6</b>	1m (MCQ)	$n^{\text{th}}$ term of an A.P. (Arithmetic Progression)	(b) 42	<input type="checkbox"/> 1
<b>Q7</b>	1m (MCQ)	Mid point Formula (Coordinate Geometry)	(c) (2, -1)	<input type="checkbox"/> 1
<b>Q8</b>	1m (MCQ)	Criteria for Similarity of Triangles (Triangles)	(c) 8 cm	<input type="checkbox"/> 1
<b>Q9</b>	1m (MCQ)	Properties of Tangent to a Circle (Circles)	(a) 8 cm	<input type="checkbox"/> 1
<b>Q10</b>	1m (MCQ)	Properties of Tangent to a Circle (Circles)	(d) $\sqrt{2} r$	<input type="checkbox"/> 1
<b>Q11</b>	1m (MCQ)	Trigonometric Identities (Introduction to Trigonometry)	(c) Step 3	<input type="checkbox"/> 1
<b>Q12</b>	1m (MCQ)	Trigonometric Ratios (Introduction to Trigonometry)	(d) $\frac{1}{13}$	<input type="checkbox"/> 1
<b>Q13</b>	1m (MCQ)	Applications of Trigonometry (Some Applications of Trigonometry)	(d) 40 m	<input type="checkbox"/> 1
<b>Q14</b>	1m (MCQ)	Area and Perimeter of Circle (Areas Related to Circles)	(c) Area of the circle > Area of the square	<input type="checkbox"/> 1

\*Note: These are custom made by Educart (based on CBSE Marking Scheme 2023-24) to help the students calculate their approximate score and are not officially provided by the board.



<b>Q15</b>	1m (MCQ)	Area and Perimeter of Circle (Areas Related to Circles)	(d) 7000	<input type="checkbox"/> 1
<b>Q16</b>	1m (MCQ)	Probability of an Event (Probability)	(c) 480	<input type="checkbox"/> 1
<b>Q17</b>	1m (MCQ)	Probability of an Event (Probability)	(b) 14	<input type="checkbox"/> 1
<b>Q18</b>	1m (MCQ)	Frequency Distribution (Statistics)	(a) 3	<input type="checkbox"/> 1
<b>Q19</b>	1m (A-R)	Surface Area and Volume of Solid Figures (Surface Areas and Volumes)	(c) Assertion (A) is true but Reason (R) is false.	<input type="checkbox"/> 1
<b>Q20</b>	1m (A-R)	Collinearity of Points (Coordinate Geometry)	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	<input type="checkbox"/> 1
<b>Q21</b>	2m (VSA)	Irrational Numbers (Real Numbers)	<input checked="" type="checkbox"/> Assume $\sqrt{11}$ is a rational number. (½m) <input checked="" type="checkbox"/> Show the assumption wrong by contradiction (1½m)	<input type="checkbox"/> 2
<b>Q22</b>	2m (VSA)	Thales Theorem (Triangles)	<input checked="" type="checkbox"/> Apply AA similarity criterion to prove $\Delta ADC \sim \Delta ACB$ (1m) <input checked="" type="checkbox"/> Evaluate the value of AB. (½m) <input checked="" type="checkbox"/> Evaluate the value of BD. (½m)	<input type="checkbox"/> 2
<b>Q23</b>	2m (VSA)	Properties of Tangent to a Circle (Circles)	<input checked="" type="checkbox"/> Apply appropriate property of tangent. (1m) <input checked="" type="checkbox"/> Check if P is the mid-point of AB or not. (1m)	<input type="checkbox"/> 2
<b>Q24(A)</b>	2m (VSA)	Trigonometric Ratios (Introduction to Trigonometry)	<input checked="" type="checkbox"/> Form a pair of linear equations in two variables, namely A and B, from the given relations. (½m) <input checked="" type="checkbox"/> Add equations to simplify. (½m) <input checked="" type="checkbox"/> Calculate A. (½m) <input checked="" type="checkbox"/> Calculate B. (½m)	<input type="checkbox"/> 2
<b>(OR)</b> <b>Q24 (B)</b>		Trigonometric Ratios (Introduction to Trigonometry)	<input checked="" type="checkbox"/> Divide numerator and denominator by $\cos \theta$ (1m) <input checked="" type="checkbox"/> Compare two sides it and find an acute angle (1m)	<b>OR</b> <input type="checkbox"/> 2
<b>Q25 (A)</b>	2m (VSA)	Area and Perimeter of Circle (Areas Related to Circles)	<input checked="" type="checkbox"/> Assume radius of the bigger circle. (½m) <input checked="" type="checkbox"/> Equate circumference of bigger circle to the sum of the circumference of two smaller circles. (1m) <input checked="" type="checkbox"/> Solve further to find the radius of the circle. (½m)	<input type="checkbox"/> 2
<b>(OR)</b> <b>Q25 (B)</b>		Area and Perimeter of Circle (Areas Related to Circles)	<input checked="" type="checkbox"/> Find the area of umbrella. (1m) <input checked="" type="checkbox"/> Find the area of rib. (1m)	<b>OR</b> <input type="checkbox"/> 2
<b>Q26</b>	3m (SA)	LCM and HCF (Real Numbers)	<input checked="" type="checkbox"/> Write the prime factors of the numbers. (1m) <input checked="" type="checkbox"/> Find the HCF. (1m) <input checked="" type="checkbox"/> Find the greatest number of benches in each row. (1m)	<input type="checkbox"/> 3
<b>Q27</b>	3m (SA)	Zeroes of a Polynomial (Polynomials)	<input checked="" type="checkbox"/> Assume the zeroes of polynomial to be $2x$ and $3x$ . (½m) <input checked="" type="checkbox"/> Calculate the value of x. (1m) <input checked="" type="checkbox"/> Find the zeroes. (½m) <input checked="" type="checkbox"/> Find the product of zeroes. (1m)	<input type="checkbox"/> 3

## 14 EduCart PRAYAS Marking Scheme Charts

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Q28 (A)	3m (SA)	Solution of a Pair of Linear Equations (Pair of Linear Equations in Two Variables)	<ul style="list-style-type: none"> <li>✓ Assume the actual speed of the train and actual time taken as <math>x</math> km/h and <math>y</math> hr (<math>\frac{1}{2}</math>m)</li> <li>✓ Form the pair of linear equations from the given situation (1m)</li> <li>✓ Solve the two equations simultaneously to get the values of <math>x</math> and <math>y</math> (1m)</li> <li>✓ Calculate the length of journey (<math>\frac{1}{2}</math>m)</li> </ul>	<input type="checkbox"/> 3
(OR) Q28 (B)		Solution of a Pair of Linear Equations (Pair of Linear Equations in Two Variables)	<ul style="list-style-type: none"> <li>✓ Assume the number of chocolates in both lots in form of <math>x</math> and <math>y</math> (<math>\frac{1}{2}</math>m)</li> <li>✓ Form the pair of linear equations from the given situation (1m)</li> <li>✓ Solve the two equations simultaneously to get the values of <math>x</math> and <math>y</math> (1m)</li> <li>✓ Calculate the total number of chocolates Anuj had (<math>\frac{1}{2}</math>m)</li> </ul>	<input type="checkbox"/> OR 3
Q29 (A)	3m (SA)	Properties of Tangent to a Circle (Circles)	<ul style="list-style-type: none"> <li>✓ Form equations using properties of tangents with diagram and given information. (1m)</li> <li>✓ Solve the equations. (1m)</li> <li>✓ Calculate the required values. (1m)</li> </ul>	<input type="checkbox"/> 3
(OR) Q29 (B)		Properties of Tangent to a Circle (Circles)	<ul style="list-style-type: none"> <li>✓ Write all given information and let <math>\angle PTQ = \theta</math>. (1m)</li> <li>✓ Using properties of tangents to a circle and isosceles triangle, prove <math>\angle TQP = \angle TQP</math>. (1m)</li> <li>✓ Prove <math>\angle PTQ = 2\angle OPQ</math> (1m)</li> </ul>	<input type="checkbox"/> OR 3
Q30	3m (SA)	Trigonometric Identities (Introduction to Trigonometry)	<ul style="list-style-type: none"> <li>✓ Use trigonometric identities to start simplifying LHS (1m)</li> <li>✓ Eventually reach <math>LHS = RHS</math> stage (2m)</li> </ul>	<input type="checkbox"/> 3
Q31	3m (SA)	Mean and Median (Statistics)	<ul style="list-style-type: none"> <li>✓ Make frequency distribution table with all given data (1m)</li> <li>✓ Write the formula for median (<math>\frac{1}{2}</math>m)</li> <li>✓ Find the median class (<math>\frac{1}{2}</math>m)</li> <li>✓ Calculate the median (1m)</li> </ul>	<input type="checkbox"/> 3
Q32 (A)	5m (LA)	Word Problems (Quadratic Equations)	<ul style="list-style-type: none"> <li>✓ Assume the speed of aeroplane as <math>x</math>. (<math>\frac{1}{2}</math>m)</li> <li>✓ Form a quadratic equation in <math>x</math>. (2m)</li> <li>✓ Solve it to find the values of <math>x</math>. (1m)</li> <li>✓ Pick the positive/realistic value of <math>x</math>. (<math>\frac{1}{2}</math>m)</li> <li>✓ Calculate the original duration of flight. (1m)</li> </ul>	<input type="checkbox"/> 5
(OR) Q32 (B)		Word Problems (Quadratic Equations)	<ul style="list-style-type: none"> <li>✓ Assume the speed of stream as <math>x</math>. (<math>\frac{1}{2}</math>m)</li> <li>✓ Form a quadratic equation in <math>x</math>. (2m)</li> <li>✓ Solve it to find the values of <math>x</math>. (1m)</li> <li>✓ Pick the positive/realistic value of <math>x</math>. (<math>\frac{1}{2}</math>m)</li> <li>✓ Calculate the speed of the stream. (1m)</li> </ul>	<input type="checkbox"/> OR 5
Q33	5m (LA)	Basic Proportionality Theorem (Triangles)	<ul style="list-style-type: none"> <li>✓ By Thales theorem prove <math>\frac{AD}{DB} = \frac{AP}{PC}</math>. (2m)</li> <li>✓ By Thales theorem prove <math>\frac{AP}{PC} = \frac{BQ}{QC}</math>. (2m)</li> <li>✓ Prove PQ parallel to AB. (1m)</li> </ul>	<input type="checkbox"/> 5
Q34 (A)	5m (LA)	Surface Area and Volume of Solid Figures (Surface Areas and Volumes)	<ul style="list-style-type: none"> <li>✓ Write values and calculate the slant height of conical part. (1m)</li> <li>✓ Calculate the CSA of cylinder and CSA of cone. (2m)</li> <li>✓ Calculate the total Area of Canvas/tent. (1m)</li> <li>✓ Use unit cost to calculate final value. (1m)</li> </ul>	<input type="checkbox"/> 5



(OR) Q34 (B)	5m (LA)	Surface Area and Volume of Solid Figures (Surface Areas and Volumes)	<ul style="list-style-type: none"> <li>✓ (i) <u>Calculate</u> the surface area of first new solid. (1m) <u>Calculate</u> the surface area of second new solid. (1m) <u>Find</u> the ratio of the total surface area of two new solids. (1m)</li> <li>✓ (ii) <u>Calculate</u> the volume for first new solid. (1m) <u>Calculate</u> the volume for second new solid. (1m)</li> </ul>	<b>OR</b>  <b>5</b>
Q35	5m (LA)	Median (Statistics)	<ul style="list-style-type: none"> <li>✓ <u>Make</u> frequency distribution table with all given data. (2m)</li> <li>✓ <u>Write</u> the formula for median. (½m)</li> <li>✓ <u>Find</u> the median class. (½m)</li> <li>✓ <u>Calculate</u> the median. (2m)</li> </ul>	  <b>5</b>
Q36	4m (CBQ)	General term of an A.P.(Arithmetic Progression)	<ul style="list-style-type: none"> <li>✓ (i) <u>Find</u> 'd'. (1m)</li> <li>✓ (ii) <u>Write</u> type of sequence formed. (1m)</li> <li>✓ (iii) (a) <u>Write</u> formula of general term of an A.P. (1m) <u>Calculate</u> total number of seats. (1m)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b) <u>Write</u> the sequence of the vacant seats and show it is an A.P. (1m) Using formula of general term of an A.P, calculate required seat number. (1m)</p>	  <b>4</b>
Q37	4m (CBQ)	Distance Formula (Coordinate Geometry)	<ul style="list-style-type: none"> <li>✓ (i) <u>Apply</u> the distance formula (½m) <u>Calculate</u> the length of line segment BF (½m)</li> <li>✓ (ii) <u>Apply</u> the mid-point formula (½m) <u>Find</u> the coordinates of Z (½m)</li> <li>✓ (iii) (a) <u>Write</u> the coordinate as (0, y). (½m) <u>Apply</u> the distance formula. (½m) <u>Find</u> the required coordinates on y-axis (1m)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b) <u>Find</u> the length of GH and AF. (1m) <u>Calculate</u> the area of trapezium AFGH. (1m)</p>	  <b>4</b>
Q38	4m (CBQ)	Applications of Trigonometry (Some Applications of Trigonometry)	<ul style="list-style-type: none"> <li>✓ (i) (a) <u>Apply</u> trigonometric ratios (1m) <u>Calculate</u> the angle of elevation (1m)</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>(b) <u>Apply</u> trigonometric ratios to <u>find</u> the length AB (1m) <u>Calculate</u> the distance (1m)</p> <ul style="list-style-type: none"> <li>✓ (ii) <u>Apply</u> trigonometric ratios. (½m) <u>Calculate</u> the height. (½m)</li> <li>✓ (iii) <u>Apply</u> trigonometric ratios. (½m) <u>Calculate</u> the angle of elevation. (½m)</li> </ul>	  <b>4</b>
			<b>TOTAL</b>	<b>80</b>

