

SET-1

MODEL PAPER - 1
S.S.C. PUBLIC EXAMINATIONS-2021
MATHEMATICS

(English Medium)

Class : X (Max. Marks : 100) Time : 2hr.45min.

Instructions to students:

1. There are four sections and 33 questions in this paper.
2. Answers should be written in a given answer sheets.
3. There is an internal choice in Section - IV.
4. Write all the questions visible and legibly.
5. 15 Minutes are given for reading the question paper and 2hr 30min given for writing answers.

Section - I

Note : 1. Answer all the Questions.

2. Each Question carries 1mark **12 × 1 = 12**

1. Which of the following point lies in Q_3 ? ()

A) (3, -2) B) (3, 2) C) (-3, -2) D) -3, 2)

2. What are the zeroes of x^2-1 ? ()

A) 1, 1 B) 1, -1 C) -1, -1 D) $\sqrt{1}, \sqrt{1}$

3. $\frac{7}{5}$ is the zero of $7x-5$. Is it True / False? _____

4. If $\tan\theta = \cot\theta$ then value of acute angle ' θ ' _____

5. In 2, 4, 6, 8, 10 of A.P. , common difference is _____

6. Choose the correct answer following

Statement p : $\sin 45^\circ = \frac{1}{\sqrt{2}}$

Statement q : $\tan 30^\circ = \frac{1}{\sqrt{3}}$

A) p true , q false

B) p false, q true

C) both p, q are true

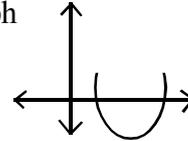
D) both p, q are false

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7. How many number of zeroes exist for the following graph

- (A) 2 (B) 0 (C) 3 (D) 4



8. Match the following ()

- | | |
|--------------------------------------|----------------------------|
| (a) Volume of cube | (i) $2\pi rh$ |
| (b) Volume of Cuboid | (ii) a^3 |
| (c) Lateral Surface area of cylinder | (iii) lbh |
| (A) A-(i), B-(ii), C-(iii) | (B) A-(ii), B-(iii), C-(i) |
| (C) A-(iii), B-(i), C-(ii) | (D) A-(i), B-(ii), C-(iii) |

9. Match the following ()

- | | |
|--|----------------------------|
| (A) value of $\log_{10} 10$ | (i) $\frac{3}{2}$ |
| (B) Zero of $2x-3$ | (ii) 3 |
| (C) Find the value of y ,
when $x = 2$ in $x + y = 5$ | (iii) 1 |
| (a) A-(i), B-(ii), C-(iii) | (b) A-(i), B-(iii), C-(ii) |
| (c) A-(iii), B-(i), C-(ii) | (d) A-(ii), B-(iii), C-(i) |

10. If $A = \{1, 2\}$ and $B = \{3, 4\}$ then $A \cup B$

11. What is the mid point of line joining (2, 2) and (4, 4).

12. In Mode $= l + \left[\frac{f_1 - f_0}{2f_1 - f_0 - f_2} \right] \times h$ 'l' represents _____ ()

- | | |
|-------------------|-------------------|
| A) lower limit | B) upper limit |
| C) lower boundary | D) upper boundary |

Section - II

Note : 1. Answer all the Questions.

2. Each Question carries 2 Marks.

8 × 2 = 16

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13. Write all possible subsets of $C = \{x, y, z\}$.
14. Is $2t-1 = 2t+5$ a linear equation in one variable?
15. If $P(x) = 5x^7 - 6x^5 - 3x + 8$, find (i) coefficient of x^5 (ii) degree of $P(x)$
16. $2, 3, 5, 7, 8, 10, 15, \dots$ is an arithmetic progression? Why?
17. What is the probability for drawing out a 'red king' from a deck of cards?
18. Write the formula to find median of a grouped data?
19. Find the coordinate of centroid of a given triangle whose vertices are $(3, -5)$, $(-7, 4)$, $(10, -2)$.
20. Rinki observed a ball on the ground from the balcony of the first floor of a building at an angle of depression θ . If the height of the first floor of the building is ' x ' meters. Draw the diagram for this data.

Section - III

Note : 1. Answer all the Questions.

2. Each Question carries 4 Marks

$8 \times 4 = 32$

21. Write $2\log 3 + 3\log 5 - 5\log 2$ as a single logarithm.
22. The area of rectangular plot 528m^2 . The length of plot is one more than twice. It's breadth we used to find length and breadth of plot.
23. If $A = \{0, 2, 4\}$, find (i) $A \cap \phi$ (ii) $A \cap A$ (iii) $A \cup \phi$. Comment.
24. Find the Quadratic polynomial if the zeroes of it are 2 and $-\frac{1}{3}$ respectively?
25. Prove that the points $A(-7, -3)$, $B(5, 10)$, $C(15, 8)$ and $D(3, -5)$ taken in order are the vertices of a parallelogram.
26. Find the mode of the given data.

Family size	1-3	3-5	5-7	7-9	9-11
Number of families	7	8	2	2	1

[Turn Over

27. Show that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$

28. A die is thrown once. Find the probability of getting

- (i) a Prime Number
- (ii) a number lying between 2 and 6
- (iii) an odd number
- (iv) multiple of 3.

Section - IV

Note : 1. Answer all the Questions.

2. Each Question carries 8 Marks

5 × 8 = 40

3. There is an **internal choice** for each question

29. A = {x: x Set of even Prime }

B = {x: x is a Natural number < 12}

C = {x: x is a multiple of 4 less than or equal to 12}

D = {x: x is a factors of 12}

Find (i) $A \cup B$ (ii) $B \cap C$ (iii) $C - D$ (iv) $A - D$

OR

If $\log\left(\frac{x+y}{3}\right) = \frac{1}{2}(\log x + \log y)$, then find the value of $\frac{x}{y} + \frac{y}{x}$.

30. For which acute angle ' θ '

$$\frac{\cos \theta}{1 - \sin \theta} + \frac{\cos \theta}{1 + \sin \theta} = 4 \text{ is true?}$$

OR

Prove that $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cot^2 A$

31. The mean pocket allowance is ₹18/-. Find the missing frequencies.

Daily pocket allowance	11-13	13-15	15-17	17-19	19-21	21-23	23-25
Number of Children	7	6	9	13	f	5	4

OR

Find the co-ordinates of the points of tri-section of the line segment joining (4,-1) and (-2,-3).

32. State and prove Pythagoras Theorem.

OR

Check whether the following are the Quadratic equation or not.

Justify your answer.

(i) $(x - 2)^2 + 1 = 2x - 3$

(ii) $x(x + 1) + 8 = (x + 2)(x - 2)$

(iii) $x(2x + 3) = x^2 + 1$

(iv) $(x + 2)^3 = x^3 - 4$

33. Draw the graph of $P(x) = x^2 - x - 12$ and find the zeroes. Justify your answer.

OR

Draw a circle of radius 6cm. From a point 10cm away from its centre construct the pair of tangents to the circle and measure their lengths. Verify by using pythogeras theorem.

Note:- (1) Academic Standards are slightly deviated for this academic year due to Covid-19.

(2) Unit weightage is considered based on alternate academic calender.