BLUE PRINT FOR MODEL PAPER

Subject : MATHEMATICS (Paper - I&II)   **Max. Marks:** 100   **Time :** 3 hrs.15min

TABLE 1

WEIGHTAGE FOR ACADEMIC STANDARDS

SL.NO.	ACADEMIC STANDARD	WEIGHTAGE	MARKS
1	AS1	40%	40
2	AS2	20%	20
3	AS3	10%	10
4	AS4	15%	15
5	AS5	15%	15
		100%	100

TABLE 2

TYPE OF QUESTIONS

SL.NO.	TYPE OF QUESTION	MARKS	QUESTION NO.s	TOTAL MARKS
1	VERY VERY SHORT	1	1 - 12	12
2	VERY SHORT	2	13 - 20	16
3	SHORT	4	21 - 28	32
4	ESSAY	8	29 - 33	40
	TOTAL		33 Q	100 M

MODEL PAPER FOR
SSC PUBLIC EXAMINATIONS – 2022
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MATHEMATICS : PAPER - I & II (English Version)

Class : X	Max.Marks : 100	Time : 3hrs.15min.

Instructions :

1. *In the duration of 3hrs, 15 min, 15 min of time is allotted to read the question paper.*

2. *All answers shall be written in the answer booklet only.*

3. *Question paper consists of 4 sections and 33 questions.*

4. *Internal choice is available in section IV only.*

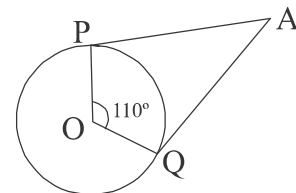5. *Answers shall be written neatly and legibly.*

SECTION - I   12 × 1 = 12 M

Note:

1. *Answer all the questions in one word or phrase*

2. *Each question carries **1** mark*

1. The exponent of 2 in the prime factorisation of 144, is ....

   A) 4　　　　　　B) 5　　　　　　C) 6　　　　　　D) 3

2. **Statement (A) :** Degree of constant polynomial is "0".

   Statement (B) : Degree of zero polynomial is "0".

   Choose the correct answer

   i) Both (A) and (B) are TRUE　　　　ii) (A) is TRUE, (B) is FALSE

   iii) (A) is FALSE, (B) is TRUE　　　　iv) Both (A) and (B) are FALSE

3. $\triangle ABC$ is an isosceles triangle right angled at 'C' and $AB^2 = n.AC^2$ then, n = ...

4. When $A \subset B$ then $A - B = $ ....

5. If AP and AQ are the two tangents to a circle with centre "O" so that

   $\angle POQ = 110°$ then $\angle PAQ = $ ....

6. Match the following

   A) $Tan (90 - \theta)$　　　　　　　i) $cos\theta$

   B) $\sqrt{1 - cos^2\theta}$　　　　　　ii) $sin\theta$

   C) $\dfrac{1}{sec\theta}$　　　　　　　iii) $cot\theta$

   a) A - iii, B - ii, C - i　　　　　b) A - ii, B - iii, C - i

   c) A - iii, B - i, C - ii　　　　　d) A - ii, B - i, C - iii

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7. In an A.P. a = 10, d = 10 then the fourth term of A.P is ....

8. A ladder of length x meter is leaning against a wall making an angle θ with the ground. Which trigono-metric ratio would you like to consider to find the height of the point on the wall at which the ladder is touching ?

9. **Assertion** : $x + 2y - 30 = 0$, $2x + 4y - 66 = 0$ equations are inconsistent equations.

   Reason : $a_1x + b_1y + c_1 = 0$, $a_2x + b_2y + c_2 = 0$ represent parallel lines if $\dfrac{a_1}{a_2} = \dfrac{b_1}{b_2} \neq \dfrac{c_1}{c_2}$

   A) Both Assertion and Reason are true. Reason is supporting the Assertion.

   B) Both Assertion and Reason are true. Reason does not support the Assertion.

   C) Assertion is true. Reason is False

   D) Assertion is False. Reason is True

10. The line of sight is above the horizontal line and angle between the line of sight and the horizontal line is called ....

11. If P(E) = 0.05, then P(not E) = ...

12. The distance of the point (4, 7) form X - axis is ....

SECTION - II   8 × 2 = 16 M

Note:

1. *Answer all the questions.*

2. *Each question carries* **2** *marks.*

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13. The points (2, 3), (-5, -1), (3, -2) are vertices of a triangle. Find the centroid of the triangle.

14. Two concentric circles of radii 5 cm and 3 cm are drawn. Find the length of the chord of larger circle which touches the smaller circle.

15. If $x = \log_2 3$, $y = \log_2 5$ then express $\log_2 15$ in terms of x and y.

16. Check whether the equations $2x + 3y = 1$, $3x - y = 7$ have a unique solution, infinitely many solutions or no solution.

17. Find the arithmetic mean of the data 5, 6, 9, 10, 6, 6, 7

18. Two dice, one red and one yellow are thrown at the same time. Write down the possible out comes that the sum of the two numbers appearing on the top of the dice is 8.

19. Draw the venn diagram of A - B where A and B are non empty sets.

20. The wickets taken by a bowler in 10 cricket matches are as follows : 2, 6, 4, 5, 0, 2, 1, 3, 2,3. Find the mode of the data.

Note:

1. *Answer all the questions.*
2. *Each question carries **4** marks.*

21. Find a quadratic polynomial with zeroes -2 and $\frac{1}{3}$.

22. For what positive value of 'p', the following pair of linear equations have infinitely many solutions.

$$px + 3y - (p - 3) = 0$$
$$12x + py - p = 0$$

23. Find a point on the Y-axis which is equidistant from both the points A (6, 5) and B (-4, 3).

24. Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.

25. Write the following sets in set builder form

    (a) {-2, -1, 0, 1, 2}

    (b) $\left\{1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}\right\}$

26. Show that $\cot\theta + \tan\theta = \sec\theta.\csc\theta$.

27. Subba Rao started work in 1995 at an monthly salary of ₹5000 and received an increment of ₹200 each year. In which year did his income reach ₹7000 ?

28. Draw a diagram for the following situation

    "A person observes two banks of a river at angles of depression θ_1 and $\theta_2 (\theta_1 < \theta_2)$ from the top of a tree of height h which is at a side of the river. The width of the river is "d".

SECTION - IV   5 × 8 = 40 M

Note:

1. *Answer all the questions.*
2. *Each question carries **8** marks.*
3. *Each question has an internal choice.*

29. (a) If   A = {x : x is a natural number}

        B = {x : x is an even natural number}

        C = {x : x is an odd natural number}

        D = {x : x is a prime number}

    Find A-B, B∩C, A∪B, B-D

(OR)

(b) The median of the following data is 525. Find the values of x and y, if the total frequency is 100. Here CI stands for class interval and Fr for frequency.

CI	0-100	100-200	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000
Fr	2	5	x	12	17	20	y	9	7	4

30. (a) Find the value of K if the points (7, -2), (5, 1) and (3, K) are collinear.

(OR)

(b) The hypotenuse of a right triangle is 6m more than twice of the shortest side. If the third side is 2 m. less than the hypotenuse, find the sides of the triangle.

31. (a) Prove that $\sqrt{2}+\sqrt{3}$ is irrational.

(OR)

(b) If cosecθ + cotθ = k then prove that $\cos\theta = \dfrac{k^2-1}{k^2+1}$.

32. (a) 200 logs are stacked in the following manner : 20 logs in the bottom row, 19 in the next row, 18 in the row next to it and so on. In how many rows are the 200 logs placed and how many logs are in the top row?

(OR)

(b) A box contains 90 discs which are numbered from 1 to 90. If one disc is drawn at random from the box, find the probability that it bears i) a two-digit number ii) a perfect square.

33. (a) Draw the graph of p(x) $x^2 - 6x+9$ and find the zeroes.

(OR)

(b) Draw a pair of tangents to a circle of radius 5 cm which are inclined to each other at an angle of 60º.

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