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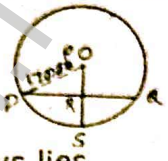
ASS **9** - Std

ANNUAL EXAMINATION - 2025
MATHEMATICS

Time : 3.00 Hrs Marks : 100

I Choose the correct answer. Answer all questions. 14 X 1= 14

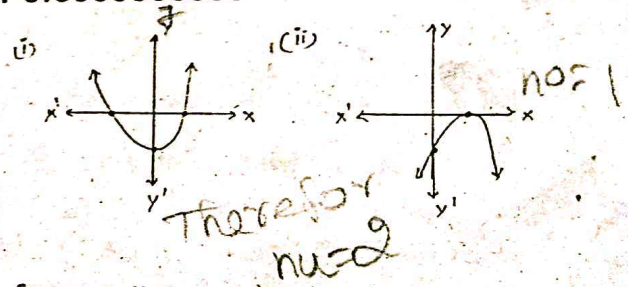
1. If A = {x, y, z} then the number of non - empty subsets of A is
   a) 8 b) 5 c) 6 d) 7
2. Which of the following is true?
   a) $A - B = A \cap B$ b) A – B = B – A c) $(A \cup B)' = A' \cup B'$ d) $(A \cap B)' = A' \cup B'$
3. $\sqrt{27} + \sqrt{12} =$ a) $\sqrt{39}$ b) $5\sqrt{6}$ c) $5\sqrt{3}$ d) $3\sqrt{5}$
4. $(a + b - c)^2$ is equal to
   a) $(a - b + c)^2$ b) $(-a - b + c)^2$ c) $(a + b + c)^2$ d) $(a - b - c)^2$
5. GCD of any two prime number is ..... . a) –1 b) 0 c) 1 d) 2
6. The angle of the triangle are $(3x - 40)^\circ$, $(x + 20)^\circ$ and $(2x - 10)^\circ$ then the value of x is a) 40° b) 35° c) 50° d) 45°
7. In the given figure, If OP = 17cm, PQ = 30cm and OS is perpendicular to PQ, then RS is
   a) 10cm b) 6cm c) 7 cm d) 9cm



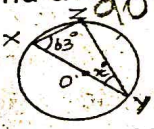
8. If the y - coordinate of a point is zero, then the point always lies ..... .
   a) in the I quadrant b) in the II quadrant c) on x - axis d) on y axis
9. The ratio in which the x - axis divides the line segment joining the points A (a_1, b_1) and B (a_2, b_2) is a) $b_1 : b_2$ b) $-b_1 : b_2$ c) $a_1 : a_2$ d) $-a_1 : a_2$
10. If $\tan\theta = \cot 37^\circ$ then the value of θ is a) 37° b) 53° c) 90° d) 1°
11. Given that $\sin\alpha = \frac{1}{2}$ and $\cos\beta = \frac{1}{2}$, then the value of $\alpha + \beta$ is
    a) 0° b) 90° c) 30° d) 60°
12. If the ratio of the sides of two cubes are 2 : 3, then ratio of their surface are will be
    a) 4 : 6 b) 4 : 9 c) 6 : 9 d) 16 : 36
13. For which set of number of the mean, median and mode all have the same values?
    a) 2, 2, 2, 4 b) 1, 3, 3, 5 c) 1, 1, 2, 5, 6 d) 1, 1, 2, 1, 5
14. Probability lies between a) –1 and +1 b) 0 and 1 c) 0 and n d) 0 and ∞

II Answer any 10 questions. Q.No. 28 is compulsory. 10 x 2 = 20

15. Find the number of subsets and the number of proper subsets of the set.
    W = (Red, Blue, Yellow)
16. Find the symmetric difference between P and Q P = {2, 3, 5, 7, 11}, Q = {1, 3, 5, 11}.
17. Without actual division, classify the decimal expansion of the following number as terminating or non - terminating and recurring $\frac{31}{400}$.
18. Represent the number in the scientific notation. 0.0000006000
19. Find the number of zeros of the following polynomials represented by their graphs



20. Find the GCD of a^{m+1}, a^{m+2}, a^{m+3}.
21. Find the value of x°.



22. If (x, 3), (6, y), (8, 2), (9, 4) are the vertices of a parallelogram taken in order, then find the value of x and y.
23. Find the centroid of the triangle whose vertices are (-5, –5), (1, –4) and (–4, –2).

24. Verify the equality : $\sin^2 60^\circ + \cos^2 60^\circ = 1$.

25. Evaluate : $\frac{\sec 63^\circ}{\operatorname{cosec} 27^\circ}$.

26. A cube has the total surface area of 486cm^2. Find its lateral surface area.

27. Find the mode of the given data : 3.1, 3.2, 3.3, 2.1, 1.3, 3.3, 3.1

28. If the probability of success of an experiment is 0.4, what is the probability of failure?

10 X 5 = 50

III Answer any 10 questions. Q.No. 42 is compulsory.

29. Verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ using Venn diagrams.

30. In a colony, 275 families buy Tamil Newspaper, 150 families buy English new papers, 45 families buy Hindi newspaper, 125 families buy Tamil and English newspapers, 17 families buy English and Hindi news papers, 5 families buy Tamil and Hindi newspapers and 3 families buy all the three new papers. If each family buy atleast one of these newspapers then find, (i) number of families buy only one newspaper (ii) number of families buy atleast two news papers (iii) total number of families in the colony.

31. Represent the following number on the number line. $4.7\overline{3}$ upto 4 decimal places.

32. If the quotient on dividing $x^4 + 10x^3 + 35x^2 + 50x + 29$ by $(x + 4)$ is $x^3 - ax^2 + bx + 6$, then find the value of a, b and also remainder.

33. Solve by cross - multiplication method $6x + 7y - 11 = 0$; $5x + 2y = 13$.

34. Find the length of a chord which is at a distance of $2\sqrt{11}$ cm from the centre of a circle of radius 12cm.

35. Show that (4, 3) is the centre of the circle passing through the points (9, 3), (7, –1), (–1, 3). Also find its radius.

36. The points A (–5, 4), B (–1, –2) and C (5, 2) are the vertices of an isosceles right - angled triangle where the right angle is at B. Find the coordinates of D so that ABCD is a square.

37. Find the value of $(\sin 90^\circ + \cos 60^\circ + \cos 45^\circ) \times (\sin 30^\circ + \cos 0^\circ - \cos 45^\circ)$.

38. Find the value of $\frac{\cot\theta}{\tan(90^\circ - \theta)} + \frac{\cos(90^\circ - \theta)\tan\theta\sec(90^\circ - \theta)}{\sin(90^\circ - \theta)\cot(90^\circ - \theta)\operatorname{cosec}(90^\circ - \theta)}$.

39. The dimensions of a sweet box are 22cm x 18cm x 10cm. How many such boxes can be pack in a carton of dimensions 1m x 88cm x 63cm?

40. The following are the marks scored by the students in the Summative Assessment Exam.

Class	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	2	7	15	10	11	5

Calculate the medium.

41. Two dice are rolled, find the probability that the sum is
i) equal to 1 ii) equal to 4 iii) less than 13.

42. Find the value of a and b if $\frac{5+\sqrt{3}}{5-\sqrt{3}} = a + b\sqrt{3}$.

2 X 8 = 16

IV Answer all the questions.

43. a) Draw an equilateral triangle of sides 6.5 cm and locate ortho centre. ***(OR)***
b) Construct the circumcentre of the Δ ABC with AB = 5 cm $\angle A = 60^\circ$ and $\angle B = 80^\circ$. Also draw the circumcircle and find the circum radius of the Δ ABC.

44. a) Draw the graph of $Y = \left(\frac{2}{3}\right)x + 3$. ***(OR)*** b) Solve graphically x + y = 7; x - y = 3.