S **COMMON QUARTERLY EXAM**
Standard - IX
MATHEMATICS

Reg.No. 9 4 2 0

Marks:100

14×1=14

Time: 3.00 hrs.

I. **Choose the best answer:**

1. If $B \subseteq A$ then $n(A \cap B)$ is
   a) $n(A - B)$ b) $n(B)$ c) $n(B - A)$ d) $n(A)$

2. If $A = \{x, y, z\}$ then the number of non-empty sets of A is
   a) 8   b) 5   c) 6   d) 7

3. If $B - A$ is B, then $A \cap B$ is
   a) A   b) B   c) U   d) ϕ

4. 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) $(A \cap B)' = A' \cup B$

5. Which one of the following is an irrational number.
   a) $\sqrt{25}$ b) $\sqrt{\frac{9}{4}}$ c) $\frac{7}{11}$ d) π

6. $0.\overline{34} + 0.3\overline{4} = $
   a) $0.6\overline{87}$ b) $0.\overline{68}$ c) $0.6\overline{8}$ d) $0.68\overline{7}$

7. $4\sqrt{7} \times 2\sqrt{3} = $ _____.
   a) $6\sqrt{10}$ b) $8\sqrt{21}$ c) $8\sqrt{10}$ d) $6\sqrt{21}$

8. If $\sqrt{9^x} = \sqrt[3]{9^2}$ then $x = $ _____.
   a) $\frac{2}{3}$ b) $\frac{4}{3}$ c) $\frac{1}{3}$ d) $\frac{5}{3}$

9. The root of the polynomial equation $2x + 3 = 0$ is
   a) $\frac{1}{3}$ b) $-\frac{1}{3}$ c) $-\frac{3}{2}$ d) $-\frac{2}{3}$

10. If $x^{51} + 51$ is divided by $x + 1$, then the remainder is
    a) 0   b) 1   c) 49   d) 50

11. $(x+y)(x^2 - xy + y^2)$ is equal to
    a) $(x+y)^3$ b) $(x - y)^3$ c) $(x^3 + y^3)$ d) $x^3 - y^3$

12. Degree of the constant polynomial is _____.
    a) 3   b) 2   c) 1   d) 0

13. The exterior angle of a triangle is equal to the sum of two
    a) Exterior angles   b) Interior opposite angles
    c) Alternate angles   d) Interior angles

14. The centroid divides each median in the ratio _____ from the vertex.
   a) 1 : 3   b) 2 : 1   c) 1 : 2   d) 3 : 1

II. Answer any 10 questions. Q.No.28 is compulsory: **10×2=20**

15. Find the number of subsets and the number of proper subsets of a set
X = {a, b, c, x, y, z}

16. Represent A △ B through Ven diagram.

17. If P = {1, 2, 5, 7, 9}, Q = {2, 3, 5, 9, 11}, R = {3, 4, 5, 7, 9} and
S = {2, 3, 4, 5, 8} then find (P∩Q)∩S

18. If n(A) = 300, n(A∪B) = 500, n(A∩B) = 50 and n(B') = 350 find n(B) and n(U).

19. Find any three rational numbers between $\frac{-7}{11}$ and $\frac{2}{11}$.

20. Convert the decimal number $0.4\overline{5}$ in the form of $\frac{p}{q}$.

21. Express the following in the form 2^n : i) 8   ii) 32

22. Express in scientific notation : i) 9768854   ii) 0.04567891

23. Find the product (4x - 5) and (2x² + 3x - 6)

24. Show that (x + 2) is a factor x³ - 4x² - 2x + 20

25. Expand the following using identities : (3x + 4y)²

26. Factorise the following : p² - 6p - 16

27. The angles of a triangle are in the ratio 1 : 2 : 3. Find the measure of each angle of the triangle.

28. Rationalise the denominator of $\frac{5+\sqrt{3}}{5-\sqrt{3}}$

III. Answer any 10 questions Q.No.42 is compulsory: **10×5=50**

29. Verify A ≈ (B∪C) = (A∩B) (A - C) using Venn diagrams.

30. If U = {4, 7, 8, 10, 11, 12, 15, 16}, A = {7, 8, 11, 12}, B = {4, 8, 12, 15}
then verify (A∪B)' = A'∩B'

31. In a group of 100 students, 85 students speak Tamil, 40 students speak English, 20 students speak French, 32 speak Tamil and English, 13 speak English and French and 10 speak Tamil and French. If each student knows atleast any one of these languages, then find the number of students who speak all these three languages.

32. If U = {x : x ∈ N, x ≤ 10} ; A = {2, 3, 4, 8, 10} and B = {1, 2, 5, 8, 10} then verify that n(A∪B) = n(A) + n(B) - n(A∩B).

33. Represent $\sqrt{9.3}$ on a number line.

34. 5.348, Represent on the number line.

35. Arrange in ascending order : $\sqrt[3]{2}, \sqrt[2]{4}, \sqrt[4]{3}$

36. If $x = \sqrt{5} + 2$, then find the value of $x^2 + \dfrac{1}{x^2}$

37. Subtract the second polynomial from the first polynomial and find the degree of the resultant polynomial.
   $P(x) = 7x^2 + 6x - 1$; $q(x) = 6x - 9$

38. Determine the value of m, if $(x + 3)$ is a factor of $x^3 - 3x^2 - mx + 24$.

39. Expand the following : $(x + 5)(x + 6)(x + 4)$

40. Find quotient and the remainder when f(x) is divided by g(x) : $f(x) = 8x^3 - 6x^2 + 15x - 7$; $g(x) = 2x + 1$

41. Find all the three angles of the $\triangle ABC$.
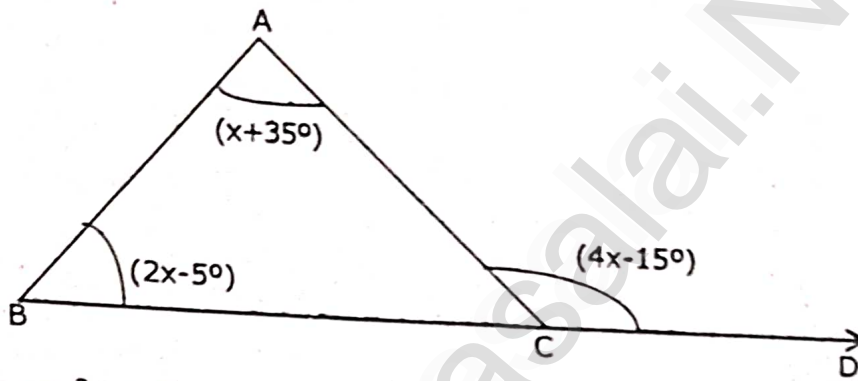
42. Factorise : $2x^3 - 3x^2 - 3x + 2$

IV. Answer all the questions:

43. Draw $\triangle ABC$ where AB = 6cm, $\angle B = 110°$ and AC = 9cm and Construct the centroid.

(OR)

Draw and locate the orthocentre of a right triagnel PQR where PQ = 4.5cm, QR = 6cm and PR = 7.5cm

44. Draw the graph : $y = 3x - 1$

(OR)

Draw the graph : $y = \left(\dfrac{3}{2}\right)x + 3$

2×8=16

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MORE DETAIL CONTACT