QL

QUARTERLY COMMON EXAMINATION - 2024

9 - Std

MATHS

Time : 3.00 Hrs.

MARKS : 100

I **Answer all the questions.** 14 X 1 = 14

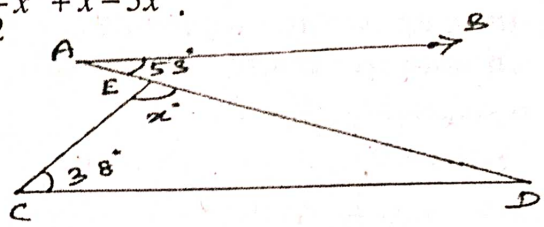
Choose the most appropriate answer from the given four alternatives.

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 $A \cup B = A \cap B$ then
   a) $A \neq B$ b) $A = B$ c) $A \subset B$ d) $B \subset A$
3. If $n(A) = 10$ and $n(B) = 15$, then the minimum and maximum number of elements in $A \cap B$ is
   a) 10, 15 b) 15, 10 c) 10, 0 d) 0,10
4. If $U = \{x : x \in N \text{ and } x < 10\}$, $A = \{1,2,3,5,8\}$, $B = \{2,5,6,7,9\}$ then $n[(A \cup B)'$ is
   a) 1 b) 2 c) 4 d) 8
5. If $n(A \cup B \cup C) = 100$, $n(A) = 4x$, $n(B) = 6x$, $n(C) = 5x$, $n(A \cap B) = 20$, $n(B \cap C) = 15$, $n(A \cap C) = 25$, $n(A \cap B \cap C) = 10$ then x is ..... .
   a) 10 b) 15 c) 25 d) 30
6. Which one of the following is an irrational number
   a) $\sqrt{25}$ b) $\sqrt{9/4}$ c) $\frac{7}{11}$ d) π
7. $\sqrt{27} + \sqrt{12} =$ a) $\sqrt{39}$ b) $5\sqrt{6}$ c) $5\sqrt{3}$ d) $3\sqrt{5}$
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. $4\sqrt{7} \times 2\sqrt{3} =$ a) $6\sqrt{10}$ b) $8\sqrt{21}$ c) $8\sqrt{10}$ d) $6\sqrt{21}$
10. The root of the polynomial equation $2x + 3 = 0$ is
    a) $1/3$ b) $-1/3$ c) $-3/2$ d) $-2/3$
11. Degree of polynomial $(y^3 - 2)(y^3 + 1)$ is
    a) 9 b) 2 c) 3 d) 6
12. $(x + y)(x^2 - xy + y^2)$ is equal to ..... .
    a) $(x + y)^2$ b) $(x - y)^3$ c) $x^3 + y^3$ d) $x^3 - y^3$
13. $(a + b - c)^2$ is equal to .....
    a) $(a - b + c)^2$ b) $(-a - b + c)^2$ c) $(a + b + c)^2$ d) $(a - b - c)^2$
14. The exterior angle of a triangle is equal to the sum of two
    a) Exterior angle b) Interior opposite angle c) Alternate angle d) Interior angle

II **Answer any 10 questions. Question No. 28 is compulsory.** 10 X 2 = 20

15. List the set of letters of the following word in Roster form i) INDIA ii) MISSISSIPPI
16. Write down the power set of the following set $B = \{1,2,3\}$.
17. If $n[P(A)] = 256$ then find $n(A)$.
18. If $P = \{1,2,5,7,9\}$, $Q = \{2,3,5,9,11\}$, $R = \{3,4,5,7,9\}$ find $(P \cup Q) \cup R$.
19. $0.\overline{3}$ convert the decimal number in the form of p/q.

21. Simplify : $5\sqrt{3} + 18\sqrt{3} - 2\sqrt{3}$.
22. Write the following number in decimal form i) 3.459×10^6 ii) 5.678×10^4.
23. Write in standard form of the polynomial $\sqrt{2}x^2 - \frac{7}{2}x^4 + x - 5x^3$.
24. Evaluate by using identities. 1001^3.
25. Expand $(x + 2y + 3z)^2$.
26. Factorize : $2x^2 + 15x + 27$.
27. In the figure AB is parallel to CD, find `x'.



28. If A = {-3, -2, 1, 4}, B = {0, 1, 2, 4} find i) A - B ii) B - A.

III Answer any 10 questions. Question 42 is compulsory. 10 X 5 = 50

29. Let U = {0,1,2,3,4,5,6,7}, A = {1,3,5,7}, B = {0,2,3,5,7} find the following
i) A′ ii) B′ iii) $A' \cup B'$ iv) $A' \cap B'$ v) $(A \cup B)'$
30. If A = {p,q,r,s}, B = {m,n,q,s,t}, C= {m,n,p,q,s} then verify the associative property of union of sets.
31. If A = {x : x∈ z, -2 < x ≤ 4}, B = {x : x ∈w, x ≤ 5}, C = {-4, -1, 0, 2, 3, 4} then verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.
32. If U = {x : x∈N, x ≤ 10}, A = {2,3,4,8,10}, B = {1,2,5,8,10} then verify that $n(A \cup B) = n(A) + n(B) - n(A \cap B)$.
33. Represent $\sqrt{9.3}$ on a number line.
34. Represent $6.\overline{4}$ upto 3 decimal places on the number line.
35. Simplify : $2\sqrt[3]{40} + 3\sqrt[3]{625} - 4\sqrt[3]{320}$.
36. If $x = \sqrt{5} + 2$, then find the value of $x^2 + \frac{1}{x^2}$.
37. Represent the number in scientific notation.
$\{(0.00003)^6 \times (0.00005)^4\} \div \{(0.009)^3 \times (0.05)^2\}$.
38. What must be subtracted from $2x^4 + 4x^2 - 3x + 7$ to get $3x^3 - x^2 + 2x + 1$?
39. Find the zeros of the following polynomials i) f(x) = 2x + 1 ii) f(x) = 3x - 5.
40. By remainder theorem, find the remainder when, p(x) is divided by g(x) where $p(x) = x^3 - 2x^2 - 4x - 1$; $g(x) = x + 1$.
41. Evaluate (by using identity) $7^3 - 10^3 + 3^3$.
42. A survey of 1000 formers found that 600 grew paddy, 350 grew ragi, 280 grew corn, 120 grew paddy and ragi, 100 grew ragi and corn, 80 grew paddy and corn. If each former grew atleast any one of the above three then find the number of formers who grew all the three.

IV Answer all the question. 2 X 8 = 16

43. a) Construct ΔLMN, LM =7.5 cm, MN = 5 cm and LN =8 cm. Locate its centroid
(OR) b) Construct ΔPQR whose sides are PQ =6 cm, $\angle Q = 60^\circ$, QR =7cm. Locate its orthocentre.
44. a) Draw a triangle ABC, AB =8 cm, BC = 6 cm, $\angle B = 70^\circ$ and locate its circum center and draw the circum circle. ***(OR)***
b) Draw an equilateral triangle of side 6.5cm and locate its incentre. Also draw the incircle.