

QL

QUARTERLY COMMON EXAMINATION - 2024

9 - Std

MATHS

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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.

- If $B \subseteq A$ then $n(A \cap B)$ is
a) $n(A - B)$ b) $n(B)$ c) $n(B - A)$ d) $n(A)$
- If $A \cup B = A \cap B$ then
a) $A \neq B$ b) $A = B$ c) $A \subset B$ d) $B \subset A$
- 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
- 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
- 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
- Which one of the following is an irrational number
a) $\sqrt{25}$ b) $\sqrt[3]{9/4}$ c) $\frac{7}{11}$ d) π
- $\sqrt{27} + \sqrt{12} =$ a) $\sqrt{39}$ b) $5\sqrt{6}$ c) $5\sqrt{3}$ d) $3\sqrt{5}$
- If $\sqrt[3]{9^x} = \sqrt[3]{9^2}$, then $x =$
a) $\frac{2}{3}$ b) $\frac{4}{3}$ c) $\frac{1}{3}$ d) $\frac{5}{3}$
- $4\sqrt{7} \times 2\sqrt{3} =$ a) $6\sqrt{10}$ b) $8\sqrt{21}$ c) $8\sqrt{10}$ d) $6\sqrt{21}$
- The root of the polynomial equation $2x + 3 = 0$ is
a) $\frac{1}{3}$ b) $-\frac{1}{3}$ c) $-\frac{3}{2}$ d) $-\frac{2}{3}$
- Degree of polynomial $(y^3 - 2)(y^3 + 1)$ is
a) 9 b) 2 c) 3 d) 6
- $(x + y)(x^2 - xy + y^2)$ is equal to
a) $(x + y)^2$ b) $(x - y)^3$ c) $x^3 + y^3$ d) $x^3 - y^3$
- $(a + b - c)^2$ is equal to
a) $(a - b + c)^2$ b) $(-a - b + c)^2$ c) $(a + b + c)^2$ d) $(a - b - c)^2$
- 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

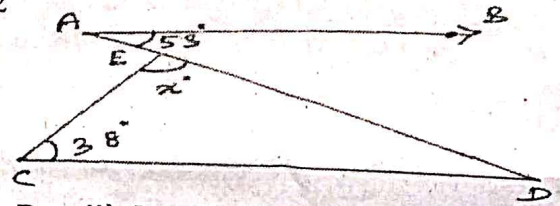
II Answer any 10 questions. Question No. 28 is compulsory.

10 X 2 = 20

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

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20. Find the value of $(243)^{\frac{2}{3}}$
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 $A = \{x : x \in \mathbb{Z}, -2 < x \leq 4\}$, $B = \{x : x \in \mathbb{W}, x \leq 5\}$, $C = \{-4, -1, 0, 2, 3, 4\}$ then verify $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$.
32. If $U = \{x : x \in \mathbb{N}, x \leq 10\}$, $A = \{2, 3, 4, 8, 10\}$, $B = \{1, 2, 5, 8, 10\}$ 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 $6.\bar{4}$ 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 farmers 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 farmer grew atleast any one of the above three then find the number of farmers who grew all the three.

SIVANANDHA K.M.A., B.Ed.
GHS SANDHANAPALLI
DENKANIKOTTA TK
KRISHNAGIRI DISTRICT
PH:9003373506

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, $\angle Q = 60^\circ$, $QR = 7$ cm. 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 6.5 cm and locate its incentre. Also draw the incircle.