QUARTERLY EXAMINATION - 2025

9. Std

Time : 3.00 HOUR

MATHEMATICS

Reg.No | 9204 |

MARKS: 100

Instructions:

❖ Write clearly and legibly without mistakes and overwriting utilising the maximum time allotted for the exam

❖ Answers should be in your own style without changing the main core concept.

❖ Use only black or blue ink pen to write the exam.

❖ Draw clear diagrams wherever necessary.

PART - I

I   **Choose the correct answer.**   **14x1=14**

1. The set $P = \{x / x \in z; -1 < x < 1\}$ is a

   a) Singleton set   b) Power set   c) Null set   d) Sub set

2. If $A \cup B = A \cap B$, then

   a) A # B   b) A = B   c) $A \subset B$ d) $B \subset A$

3. Let $A = \{ \phi \}$ and $B = P(A)$, then $A \cap B$ is

   a) $\{\phi, \{\phi\}\}$ b) $\{\phi\}$ c) ϕ d) $\{0\}$

4. For any three sets A, B and C, $(A-B) \cap (B-C)$ is equal to

   a) A only   b) B only   c) C only   d) ϕ

5. Which one of the following is an irrational number.

   a) $\sqrt{25}$ b) $\sqrt{\dfrac{9}{4}}$ c) $\dfrac{7}{11}$ d) π

6. $\sqrt{27} + \sqrt{12} =$

   a) $\sqrt{39}$ b) $5\sqrt{6}$ c) $5\sqrt{3}$ d) $3\sqrt{5}$

   If $\sqrt{80} = K\sqrt{5}$, then K =

   a) 2   b) 4   c) 8   d) 16

   If $\sqrt{9^x} = \sqrt[3]{9^2}$, then $x = \ldots\ldots$

   a) $\dfrac{2}{3}$ b) $\dfrac{4}{3}$ c) $\dfrac{1}{3}$ d) $\dfrac{5}{3}$

   2x

   The root of the polynomial equation $2x + 3 = 0$ is

   a) $\dfrac{1}{3}$ b) $\dfrac{-1}{3}$ c) $\dfrac{-3}{2}$ d) $\dfrac{-2}{3}$

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10. Zeros of $(2-3x)$ is ....

    a) 3   b) 2   c) $\frac{2}{3}$ d) $\frac{3}{2}$

11. If $x-3$ is a factor of $P(x)$, then the remainder is

    a) 3   b) -3   c) P(3)   d) P(-3)

12. Degree of the constant polynomial is

    a) 3   b) 2   c) 1   d) 0

13. Which of the following is a solution of the equation $2x-y = 6$.

    a) (2,4)   b) (4,2)   c) (3,-1)   d) (0,6)

14. 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 angle

PART - II

II   **Answer any Ten of the following questions. Q.No: 28 is compulsory.**   **10x2**

15. Represent the set $D = \{x : x \in z; -5 < x \le 2\}$ in Roster form.

16. Write all the subsets of $A = \{a,b\}$.

17. Find the symmetric difference between the sets $R = \{l, m, n, o, p\}$ and $S = \{j, l, n, q\}$

18. Let $A = \{b,d,e,g,h\}$ and $B = \{a,e,c,h\}$ Verify that $n(A-B) = n(A) - n(A \cap B)$

19. Find any two rational numbers between $\frac{1}{2}$ and $\frac{2}{3}$.

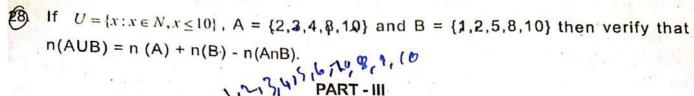20. Find the value of $\left(\frac{64}{125}\right)^{\frac{-2}{3}}$

21. Simplify $4\sqrt[3]{5} + 2\sqrt[3]{5} - 3\sqrt[3]{5}$.

22. Write $(0.00000005)^3$ into scientific notation.

23. Add $P(x) = 6x^2 - 7x + 2$ and $q(x) = 6x^3 - 7x + 15$ and find the degree of the resultant polyn

24. Check whether -3 and 3 are zeros of the polynomial $x^2 - 9$.

25. Using factor theorem show that $(x-5)$ is a factor of the polynomial. $2x^3 - 5x^2 - 28x + 15$.

26. Find $27a^3 + 64b^3$, if $3a+4b=10$ and $ab = 2$.

$(a+b)^2 = a^2 + 2ab + b^2$

$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$

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27. Find the GCD of $(a-b)^2$, $(b-c)^3$, $(c-a)^4$.

28. If $U = \{x : x \in N, x \leq 10\}$, $A = \{2,3,4,8,10\}$ and $B = \{1,2,5,8,10\}$ then verify that n(AUB) = n (A) + n (B) - n(AnB).

PART - III

III · Answer any Ten of the following questions.
Question no: 42 is compulsory.   10x5=50

29. Let U = {0,1,2,3,4,5,6,7}, A = {1,3,5,7} and B = {0,2,3,5,7}. Find the following sets.

   (i) A'   (ii) B'   (iii) A' U B'   (iv) A' ∩ B'   (v) (AUB)'

30. If $A = \{x : x \in z; -2 < x < 4\}$, $B = \{x : x \in w; x < 5\}$ C = {-4,-1,0,2,3,4} then verify AU(B ∩C) = (AUB) ∩ (AUC).

31. Verify A - (B ∩C) = (A-B) U (A-C) using Venn diagrams.

32. 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.

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

34. Arrange surds in descending order. $\sqrt[3]{5}, \sqrt[9]{4}, \sqrt[6]{3}$

35. Find the value of a and b if $\dfrac{\sqrt{7}-2}{\sqrt{7}+2} = a\sqrt{7}+b$.

36. The cost of a chocolate is Rs $(x+y)$ and Amir bought $(x+y)$ chocolates. Find the total amou paid by him in terms of x and y. If $x = 10$, y = 5. Find the amount paid by him.

37. If $(x-1)$ divides the polynomial $kx^3 - 2x^2 + 25x - 26$ without remainder then find the value of

38. Factorise the polynomial $x^3 - 10x^2 - x +10$, using synthetic division.

39. If $(x+y+z) = 9$ and $(xy+yz+zx) = 26$ then find the value of $x^2+y^2+z^2$.

40. Find the quotient and the remainder when $(5x^2-7x+2) \div (x-1)$.

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

42. (i) Simplify $(1.02 \times 10^{10}) \times (1.20 \times 10^{-3})$, (ii) $(50000000)^4$ using Scientific notation.

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PART - IV

2x8=16

IV   Answer the following questions.

43.   a) Construct the centroid of △ PQR whose sides are PQ = 8cm, QR = 6cm, RP = 7cm.

[OR]

   b) Draw △PQR with sides PQ = 7cm, QR = 8cm, and PR = 5cm and construct its Orthocentre.

44.   a) Draw the graph for y = 3x - 1.

[OR]

Solve graphically x + y = 7; x - y = 3.

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