COMMON QUARTERLY EXAMINATION - 2025

Standard IX

Reg.No. | | | | | | |

MATHEMATICS

Time : 3.00 hrs **Part - I** **Marks : 100**

I. Choose the best answer: **14 x 1 = 14**

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. Which of the following is correct?
   a) $\phi \subseteq \{a, b\}$ b) $\phi \in \{a, b\}$ c) $\{a\} \in \{a, b\}$ d) $a \subseteq \{a, b\}$
3. Let $A = \{\phi\}$ and $B = \rho(A)$, 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. If n is a natural number, then $\sqrt{n}$ is
   a) always a natural number b) always an irrational number
   c) always a rational number d) may be rational or irrational
6. Which one of the following has a terminating decimal expansion?
   a) $\frac{5}{64}$ b) $\frac{8}{9}$ c) $\frac{14}{15}$ d) $\frac{1}{12}$
7. If $\sqrt{80} = k\sqrt{5}$, then k =
   a) 2 b) 4 c) 8 d) 16
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. If $x^3 + 6x^2 + kx + 6$ is exactly divisible by $(x + 2)$ then k = ?
   a) –6 b) –7 c) –8 d) 11
10. The zero of the polynomial $2x + 5$ is
    a) $\frac{5}{2}$ b) $\frac{-5}{2}$ c) $\frac{2}{5}$ d) $\frac{-2}{5}$

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. 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. Degree of the polynomial $(y^3-2)(y^3+1)$ is

a) 9 b) 2 c) 3 d) 6

Part - II

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

15. If A = {–3,–2,1,4} and B = {0,1,2,4}, find (i) A – B (ii) B – A

16. If n[p(A)] = 256, find n(A)

17. Find the symmetric difference between X = {5,6,7} and Y = {5,7,9,10}

18. If n(A) = 25, n(B) = 40, $n(A \cup B) = 50$ and n(B') = 25, find $n(A \cap B)$ and n(U)

19. Write 625 in the form of 5^n

20. Rationalise the denominator $\frac{5}{3\sqrt{5}}$

21. 6.34×10^4 write in decimal form.

22. Simplify : $5\sqrt{3} + 18\sqrt{3} - 2\sqrt{3}$

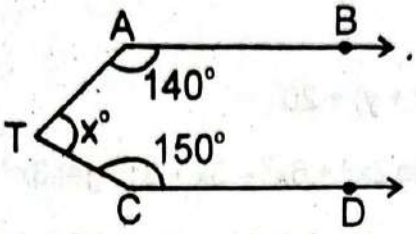
23. $\frac{x^3 - x^4 + 6x^6}{x^2}$ find the degree.

24. 1001^3 - Evaluate by using identities.

25. Factorise : $27x^3 + 125y^3$

26. $9a^3b^2c^3$, $15a^3b^2c^4$ - Find he GCD

27. In the figure, AB is parallel to CD, find x



28. Write in Roster form :

A = The set of all even natural numbers less than 20

Part - III

III. Answer any 10 questions. (Q.No.42 is compulsory) 10 x 5 = 50

29. If S = {square, rectangle, circle, rhombus, triangle} List the elements of the following subset of S.

i) The set of shapes which have 4 equal sides

ii) The set of shapes which have radius

iii) The set of shapes in which the sum of all interior angles is 180°

iv) The set of shapes which have 5 sides

30. If A = {p,q,r,s}, B = {m,n,q,s,t} and C = {m,n,p,q,s}, then verify the associative property of union of sets.

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

32. Out of 500 car owners investigated, 400 owned car A and 200 owned car B, 50 owned both A and B cars. Is this data correct?

33. Represent 4.863 on the number line.

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

35. Arrange surds in descending order : $\sqrt[2]{\sqrt[3]{5}}, \sqrt[3]{\sqrt[4]{7}}, \sqrt{\sqrt{3}}$

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

37. Check if (x + 2) and (x – 4) are the sides of a rectangle whose area is $x^2 - 2x - 8$ by using factor theorem.

38. Find the quotient and remainder when $(3x^3 - 4x^2 - 5)$ is divided by $(3x + 1)$ using synthetic division.

39. Factorise : $(x + y)^2 + 9(x + y) + 20$

40. What should be added to $2x^3 + 6x^2 - 5x + 8$ to get $3x^3 - 2x^2 + 6x + 15$?

41. ΔABC and ΔDEF are two triangles in which AB = DF, $\angle ACB = 70^\circ$; $\angle ABC = 60^\circ$; $\angle DEF = 70^\circ$ and $\angle EDF = 60^\circ$. Prove that the triangles are congruent.

42. Represent the number $3.\overline{45}$ on the number line upto 4 decimal places.

Part - IV

IV. Answer all the questions. **2 x 8 = 16**

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

(OR)

b) Construct the right triangle PQR whose perpendicular sides are 4.5 cm and 6 cm. Also locate its circumcentre and draw the circumcircle.

44. a) Draw an equilateral triangle of sides 6.5 cm and locate its orthocentre.

(OR)

b) Construct the in-centre of ΔABC with AB = 6 cm, $\angle B = 65^\circ$ and AC = 7 cm. Also draw the in-circle and measure its radius.

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