QUARTERLY EXAMINATION - 2023

CLASS : 9 | **MATHEMATICS** | Reg. No. :

TIME : 3.00 Hrs. | MAX. MARKS : 100

I. Choose the correct answer. 14x1=14

1. If B-A is B, then $A \cap B$ is
   a) A b) B c) U d) $\varnothing$
2. 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) $\varnothing$
3. If $A \cup B = A \cap B$ then
   a) $A \neq B$ b) A=B c) $A \subset B$ d) $B \subset A$
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. If A={1,2,3,4} then the number of non-empty subsets of A is
   a) 8 b) 10 c) 12 d) 15
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. $0.\overline{34} + 0.\overline{34}$
   a) $0.6\overline{87}$ b) $0.\overline{68}$ c) $0.6\overline{8}$ d) $0.68\overline{7}$
8. $4\sqrt{7} \times 2\sqrt{3} =$
   a) $6\sqrt{10}$ b) $8\sqrt{21}$ c) $8\sqrt{10}$ d) $6\sqrt{21}$
9. When $(2\sqrt{5} - \sqrt{2})^2$ is simplified. we get
   a) $4\sqrt{5} + 2\sqrt{2}$ b) $22 - 4\sqrt{10}$ c) $8 - 4\sqrt{10}$ d) $2\sqrt{10} - 2$
10. The zero of the polynomial $2x + 5$ is
    a) 5/2 b) -5/2 c) 2/5 d) -2/5
11. Degree of the polynomial $(y^3 - 2)(y^3 + 1)$ is
    a) 9 b) 2 c) 3 d) 6
12. If P(a)=0 then (x-a) is a ..... of P(x)
    a) divisor b) quotient c) remainder d) factor
13. Degree of the constant polynomial is .....
    a) 3 b) 2 c) 1 d) 0
14. If (2,3) is a solution of linear equation $2x + 3y = k$ then, the value of K is
    a) 12 b) 6 c) 0 d) 13

II. Answer any 10 questions. (Question No. 28 is compulsory) 10x2=20

15. Verify whether A = {20, 22, 23, 24} and B = { 25, 30, 40, 45} are disjoint sets.
16. If A={p,q,r,s} then write down the power set of A.
17. Find $A \cup B, A \cap B, A - B$ and B-A for the following sets
    A={a,b,c.e.u) and B={a,e,i,o,u}
18. If $n(A) = 25$, $n(B) = 40$, *and* $n(AUB) = 50$ *find* n(A $\cap$ B)
19. Find any three rational numbers between -7/11 and 2/11.

20. Write the rational numbers for the decimal expression $2.\overline{327}$.

21. Find any two irrational numbers between $\sqrt{2}$ and $\sqrt{3}$.

22. Write 625 in the form of 5^n.

23. Simplify $\sqrt{63}-\sqrt{175}+\sqrt{28}$

24. Rationalise the denominator and simplify $\dfrac{\sqrt{48}+\sqrt{32}}{\sqrt{27}-\sqrt{18}}$.

25. Write the coefficient of x^2 and x in the polynomial $6-2x^2+3x^3-\sqrt{7}\,x$

26. What is the remainder when $x^{2018}+2018$ is divided by $(x-1)$

27. Expand $(x+2y+3z)^2$

28. Find the GCD for $35x^5y^3z^4$, $49x^2yz^3$, $14xy^2z^2$.

III. Answer any 10 questions. (Question No.42 is compulsory) 10x5=50

29. If U = {-2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, A = {-1, 1, 3, 5, 7, 9,} and B = {-2, 1, 4, 7, 10} then verify De Morgan's laws for complementation.

30. If A = {0, 2, 4, 6, 8} ; B = { x : x is a prime number and $x<11$ } and $C=\{x : x\in N$ and $5\le x<9\}$ then verify $A\cup(B\cap C)=(A\cup B)\cap(A\cup C)$.

31. In a party of 45 people, each one likes tea or coffee or both. 35 people like tea and 20 people like coffee. Find the number of people who
i) like both tea and coffee ii) do not like Tea iii) do not like coffee

32. Represent $4.\overline{73}$ upto 4 decimal places on the number line.

33. Simplify $2\sqrt[3]{40}+3\sqrt[3]{625}-4\sqrt[3]{320}$

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

35. Simplify : *i*) $(2.75\text{x}10^7)+(1.23\text{x}10^8)$, *ii*)$(1.598\text{x}10^{17})-(4.58\text{x}10^{15})$

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

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

38. Find the quotient and remainder for the polynomial $4x^3+6x^2-23x+18$ divided by $(x+3)$

39. Solve, $2x-3y=7$; $5x+y=9$, using the method of substitution.

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

41. State : i) Remainder Theorem ii) Factor Theorem

42. Verify $A-(B\cup C)=(A-B)\cap(A-C)$ using venn diagram.

IV. Answer all questions 2x8=16

43. Construct the Δ PQR such that PQ=5 cm, PR=6 cm.and $\angle QPR = 60°$ and locate its centroid
(or)
Draw and locate the orthocentre of a right triangle PQR where PQ=4.5 cm, QR=6 cm and PR=7.5 cm.

44. Solve graphically if $x+y=7$, $x-y=3$ (or)
Draw the graph for $y=4x-1$
