

# COMMON QUARTERLY EXAMINATION - 2023

## Standard - IX MATHS

Reg.No. 

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Marks: 100

Time: 3.00 hrs.

**14×1=14**

### I. Choose the best Answer:

1. The set  $P = \{x/x \in \mathbb{Z}, -1 < x < 1\}$  is a
  - a) Singleton set
  - b) Power Set
  - c) Null Set
  - d) Subset
2. If  $A = \{x, y, z\}$  then the number of non-empty subsets of A is
  - a) 8
  - b) 5
  - c) 6
  - d) 7
3. 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)  $(A \cap B)' = A' \cup B'$
4. In a city, 40% people like only one fruit, 35% people like only two fruits, 20% people like all the three fruits. How many percentage of people do not like any one of the above three fruits.
  - a) 5
  - b) 8
  - c) 10
  - d) 15
5. Which one of the following has a terminating decimal expansion?
  - a)  $\frac{5}{64}$
  - b)  $\frac{8}{9}$
  - c)  $\frac{14}{15}$
  - d)  $\frac{1}{12}$
6. Find the odd one out of the following:
  - a)  $\sqrt{32} \times \sqrt{2}$
  - b)  $\frac{\sqrt{27}}{\sqrt{3}}$
  - c)  $\sqrt{72} \times \sqrt{8}$
  - d)  $\frac{\sqrt{54}}{\sqrt{18}}$
7. If  $\sqrt{80} = k\sqrt{5}$  then  $k = ?$ 
  - a) 2
  - b) 4
  - c) 8
  - d) 16
8. The length and breadth of a rectangular plot are  $5 \times 10^5$  and  $4 \times 10^4$  metres respectively. Its area is \_\_\_\_\_.
  - a)  $9 \times 10^{11} \text{m}^2$
  - b)  $9 \times 10^9 \text{m}^2$
  - c)  $2 \times 10^{10} \text{m}^2$
  - d)  $20 \times 10^{20} \text{m}^2$
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. If  $x^{51} + 51$  is divided by  $x+1$ , then the remainder's
  - a) 0
  - b) 1
  - c) 49
  - d) 50
11. Zeros of  $(2 - 3x)$  is \_\_\_\_\_.
  - a) 3
  - b) 2
  - c)  $\frac{2}{3}$
  - d)  $\frac{3}{2}$
12.  $(a+b-c)^2$  is equal to \_\_\_\_\_.
  - a)  $(a - b + c)^2$
  - b)  $(-a - b + c)^2$
  - c)  $(a + b + c)^2$
  - d)  $(a - b - c)^2$
13. Which of the following is a linear equation
  - a)  $x + \frac{1}{x} = 2$
  - b)  $x(x - 1) = 2$
  - c)  $3x + 5 = \frac{2}{3}$
  - d)  $x^3 - x = 5$
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 angles

- IX. Answer 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. Represent  $A \Delta B$  through Venn Diagram.
17. 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)  $B'$
18. If  $n(A) = 300$ ,  $n(A \cup B) = 500$ ,  $n(A \cap B) = 50$  and  $n(B') = 350$ , find  $n(B)$  and  $n(U)$
19. Express the following decimal expression into rational numbers of  $0.\overline{24}$
20. Simplify :  $4\sqrt[3]{5} + 2\sqrt[3]{5} - 3\sqrt[3]{5}$

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

22. Expand :  $(2x + 3y + 4z)^2$

23. Factorise :  $x^2 + 30x + 3y$

24. Find the GCD for the following : a)  $p^5, p^{11}, p^9$  b)  $ab^2c^3, a^2b^3c, a^3bc^2$

25. Find the remainder when  $3x^3 - 4x^2 + 7x - 5$  is divided by  $(x+3)$

26. The area of a rectangle is  $x^2 + 7x + 12$ . If its breadth is  $x + 3$  then find its length.

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

28. Write the following numbers in decimal form :

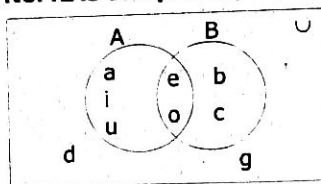
a)  $6.34 \times 10^4$  b)  $2.00367 \times 10^{-5}$

**III. Answer 10 questions. Question No.42 is compulsory. 10x5=50**

29. From the given Venn diagram.

Write the elements of

- a) A      b) B      c) A - B  
d) B - A      e)  $U$



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

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

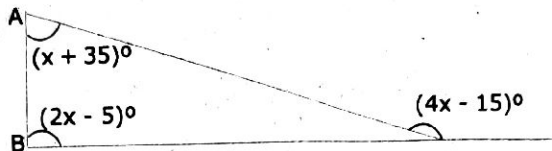
32. In a college, 240 students play cricket, 180 students play football, 164 students play hockey, 42 play both cricket and football, 38 play both football and hockey, 40 play both cricket and hockey and 16 play all the three games. If each student participate in atleast one game, then find
- i) the number of students in the college.  
ii) the number of students who play only one game

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

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

35. Given  $\sqrt{2} = 1.414$ , Find the value of  $\frac{8 - 5\sqrt{2}}{3 - 2\sqrt{2}}$  (to 3 places of decimals)

36. Simplify : i)  $(2.75 \times 10^7) + (1.23 \times 10^8)$   
 ii)  $(1.598 \times 10^{17}) - 4.58 \times 10^{15}$
37. Find the value of M, if  $(x+3)$  is a factor of  $x^3 - 3x^2 - mx + 24$
38. If  $(x+a)(x+b)(x+c) = x^3 + 14x^2 + 59x + 70$  find the value of  
 a)  $a + b + c$       b)  $\frac{1}{a} + \frac{1}{b} + \frac{1}{c}$
39. If the quotient obtained on dividing  $3x^3 + 11x^2 + 34x + 106$  by  $x - 3$  is  $3x^2 + ax + b$ , then find a, b and also the remainder.
40. Factorise :  $x^3 - 5x^2 - 2x + 24$
41. Find all the three angles of the  $\triangle ABC$ .



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

**IV. Answer the both questions:**

**2x8=16**

43. Construct the Centroid of  $\triangle PQR$  whose sides are  $PQ = 8\text{cm}$ ,  $QR = 6\text{cm}$ ,  $RP = 7\text{cm}$ .

**(OR)**

Construct  $\triangle ABC$  with  $AB = 5\text{cm}$ ,  $\angle B = 100^\circ$  and  $BC = 6\text{cm}$ . Also locate its circumcentre draw circumcircle.

44. Draw the graph :  $y = 4x - 1$

**(OR)**

Solve graphically :  $x + y = 7$  ;  $x - y = 3$

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