

COMMON QUARTERLY EXAM-2022

C

Standard IX

Reg.No.

Time : 3.00 hrs

MATHEMATICS

Marks : 100

Part - I

I. Choose the correct answer.

14 x 1 = 14

1. Which of the following is correct?

a) $\{7\} \in \{1,2,3,4,5,6,7,8,9,10\}$

b) $7 \in \{1,2,3,4,5,6,7,8,9,10\}$

c) $7 \notin \{1,2,3,4,5,6,7,8,9,10\}$

d) $\{7\} \notin \{1,2,3,4,5,6,7,8,9,10\}$

2. The set $P = \{x / x \in \mathbb{Z}, -1 < x < 1\}$ is a

a) singleton set b) power set

c) null set

d) subset

3. Which of the following is correct?

a) $\phi \subseteq \{a,b\}$

b) $\phi \in \{a,b\}$

c) $\{a\} \in \{a,b\}$

d) $a \subseteq \{a,b\}$

4. If $B - A$ is B , then $A \cap B$ is

a) A

b) B

c) U

d) ϕ

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

a) $\{\phi, \{\phi\}\}$

b) $\{\phi\}$

c) ϕ

d) $\{0\}$

6. Which one of the following regarding sum of two irrational numbers, is true?

a) always an irrational number

b) may be a rational (or) irrational number

c) always a rational number

d) always an integer

7. Which one of the following is an irrational number?

a) $\sqrt{25}$

b) $\sqrt{\frac{9}{4}}$

c) $\frac{7}{11}$

d) π

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

a) $\sqrt{39}$

b) $5\sqrt{6}$

c) $5\sqrt{3}$

d) $3\sqrt{5}$

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

a) $\frac{1}{3}$

b) $-\frac{1}{3}$

c) $-\frac{3}{2}$

d) $-\frac{2}{3}$

10. The sum of the polynomials $P(x) = x^3 - x^2 - 2$, $q(x) = x^2 - 3x + 1$

a) $x^3 - 3x - 1$

b) $x^3 + 2x^2 - 1$

c) $x^3 - 2x^2 - 3x$

d) $x^3 - 2x^2 + 3x - 1$

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

a) 9

b) 2

c) 3

d) 6

12. Which of the following has $x - 1$ as a factor?

a) $2x - 1$

b) $3x - 3$

c) $4x - 3$

d) $3x - 4$

13. 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) $\frac{\sqrt{54}}{\sqrt{18}}$

IX Maths

(2)

14. The exterior angle of a triangle is equal to the sum of two
- a) exterior angles
 - b) interior of angles
 - c) alternate angles
 - d) interior angles

Part - II

II. Answer any 10 questions. (Q.No.28 is compulsory)

10 x 2 = 20

15. Write the set of letters of the following words in Roaster form.
- i) ASSESSMENT
 - ii) PRINCIPAL
16. Represent the following sets in set builder form
E = The set of odd whole numbers less than 9.
17. If $n(A) = 4$, find $n[P(A)]$
18. If $U = \{c, d, e, f, g, h, i, j\}$ and $A = \{c, d, g, j\}$, find A'
19. Convert the following decimal numbers in the form $\frac{p}{q}$ ($p, q \in \mathbb{Z}$ and $q \neq 0$) $0.\bar{3}$
20. Write 625 in the form of 5^n .
21. Simplify the following using multiplication and division properties of surds. $\sqrt{35} \div \sqrt{7}$
22. Express in scientific notation : 9768854
23. Rewrite the following polynomial $x - 9 + \sqrt{7}x^3 + 6x^2$ in standard form.
24. If $p(x) = 4x^2 - 3x + 2x^3 + 5$ and $q(x) = x^2 + 2x + 4$ then find $p(x) + q(x)$
25. Verify the following are zeros of the polynomial indicated against them or not.
 $p(x) = x^2 - 1$, $x = 1$
26. $\triangle ABC$ and $\triangle DEF$ 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.
27. Factorise : $36m^2 - 49n^2$
28. Expand : $(x + 2y + 3z)^2$

Part - III

III. Answer any 10 questions. (Q.No.42 is compulsory)

10 x 5 = 50

29. If $n(A) = 0$ find $n(P(A))$
If $n[p(A)] = 256$, find $n(A)$
30. $A = \{2, 6, 10, 14\}$ and $B = \{2, 5, 14, 16\}$, find $A \cup B$, $A \cap B$, $A - B$, $B - A$, $A \Delta B$
31. If $A = \{b, c, e, g, h\}$, $B = \{a, c, d, g, i\}$ and $C = \{a, d, e, g, h\}$, then show that
 $A - (B \cap C) = (A - B) \cup (A - C)$
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 10th 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.

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

34. Arrange in ascending order $\sqrt[3]{2}, \sqrt[2]{4}, \sqrt[4]{3}$

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

36. Verify $(300000)^3 \times (2000)^4$ in scientific notation.

37. Is $(3x-2)$ a factor of $3x^3 + x^2 - 20x + 12$?

38. Find the quotient and remainder for $(x^3 + x^2 - 7x - 3) \div x - 3$ using synthetic division.

39. Factorise: $x^3 - 5x^2 - 2x + 24$

40. Solve by cross multiplication method: $8x - 3y = 12, 5x = 2y + 7$

41. ABCD is a cyclic quadrilateral such that

$$\angle A = (4y + 20)^\circ, \angle B = (3y - 5)^\circ, \angle C = (4x)^\circ, \angle D = (7x + 5)^\circ. \quad u + v + w + x = 360$$

Find the four angles.

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

Part - IV

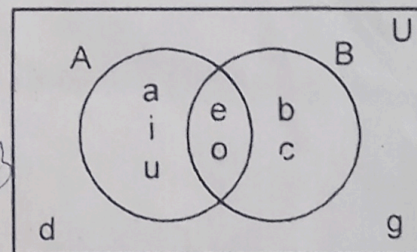
IV. Answer the following.

2 x 8 = 16

43. a) From the given Venn diagram,

write the elements of

- i) A $\{a, i, u\}$ ii) B $\{b, c\}$ iii) $A - B$ $\{a, i, u\}$ iv) $B - A$ $\{b, c\}$
 v) A' $\{d, e, o, b, c, g\}$ vi) B' $\{a, i, u, e, o, d, g\}$ vii) U $\{a, b, c, d, e, i, o, u\}$ viii) $A \cup B$ $\{a, b, c, i, o, u\}$



(OR)

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

44. a) Draw the graph of $y = 3x - 1$ (OR)

b) Solve graphically: $3x + 2y = 4, 9x + 6y - 12 = 0$
