X th MATHS

INFINITY THINK BEYOND..... AN EDUCATIONAL INSTITUTE

Practice Sheet 02

Syllabus : Unit 1 Real Number , Unit 2 Algebra (as per NCERT Chapter 1 to 5)

SUBJECT: MATHEMATICS Standard **MAX. MARKS : 40**
Subject Code:041 **DURATION : 90 min**

1. This Question Paper has 5 Sections A-E.
2. **Section A** has 8 MCQs carrying 1 mark each.
3. **Section B** has 3 questions carrying 02 marks each.
4. **Section C** has 4 questions carrying 03 marks each.
5. **Section D** has 1 questions carrying 04 marks each.
6. **Section E** has 2 questions carrying 05 marks each .

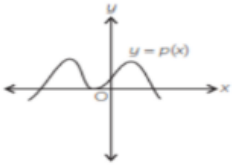
Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

SECTION – A
Questions 1 to 8 carry 1 mark each.

1.The LCM of two prime numbers p and q (p > q) is 221.Find the value of 3p – q .

(a) 4 (b) 28 (c) 38 (d) 48

2.The number of zeroes for a polynomial p(x) whose graph is given in the figure , is



(a) 4 (b) 3 (c) 5 (d) 1

3.If x – y = 2 and $\frac{2}{x+y} = \frac{1}{5}$, then ,

(a) x = 4 , y = 2 (b) x = 5 , y = 3
(c) x = 6 , y = 4 (d) x = 7 , y = 5

4.If one zero of $3x^2 + 8k + k$ be the reciprocal of the other then k = ?

(a) 3 (b) -3 (c) $\frac{1}{3}$ (d) $-\frac{1}{3}$

5. The 10th term from the end of the A.P. 4, 9,14, ..., 254 is

(a) 209 (b) 205 (c) 214 (d) 213

6. The equation of the line whose graph passes through the origin is

(a) $2x + 3y = 1$ (b) $2x + 3y = 0$ (c) $2x + 3y = 6$ (d) none of these

7. Which of the following equations has the sum of its roots as 3?

(a) $2x^2 - 3x + 6=0$ (b) $-x^2 + 3x - 3=0$ (c) $\sqrt{2}x^2 - 3\sqrt{2}x + = 0$ (d) $2x^2 - 3x + 6 = 0$

8. ASSERTION : The quadratic equation $25x^2 – 40 x + 16 = 0$ has repeated roots.
REASON : The quadratic equation $ax^2 + bx + c$ has repeated roots for D = 0 .

(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).

(c) Assertions (A) is true but reason (R) is false.
(d) Assertions (A) is false but reason (R) is true.

SECTION – B
Questions 9 to 11 carry 2 mark each.

9.For which values of p and q, will the following pair of linear equations have infinitely many solutions?

$4x + 5y = 2$; $(2p + 7q)\, x + (p + 8q)\, y = 2q - p + 1$.

10. Solve for x : $9x^2 - 6px + (p^2 - q^2) = 0$.

11. One fourth of a herd of camels was seen in forest. Twice the square root of the herd had gone to mountain and the remaining 15 camels were seen on the banks of a river. Find the total number of camels.

Or

A trader brought a number of articles for Rs. 900. 5 articles were found damaged. He sold each of the remaining articles at Rs.2 more than what he paid for it. He got a profit of Rs.80 on the whole transactions. Find the number of articles he bought.

SECTION – C
Questions 12 to 15 carry 3 mark each.

12.If α and β are the zeroes of the polynomial $f(x) = x^2 + x - 2$, write the value of $\frac{1}{\alpha} - \frac{1}{\beta}$.

13.The area of a rectangle gets reduced by 9 square units if its length is reduced by 5 units and the breadth is increased by 3 units. If we increase the length by 3 units and breadth by 2 units, the area is increased by 67 square units. Find the length and breadth of the rectangle.

Or

The students of a class are made to stand in rows. If 4 students are extra in a row, there would be 2 rowless. If students are less in a row, there would be 4 rows more. Find the number of students in the class.

14. Find the roots of the following equations:

$\frac{1}{(x-1)(x-2)} + \frac{1}{(x-2)(x-3)} = \frac{2}{3}$, $x \neq 1, 2, 3$

15. Find the greatest number of 6 digits exactly divisible by 24, 15 and 36.

SECTION – D
Questions 16 carry 4 mark each.

16. In a board game, the number of sea shells in various cells forms an A.P. If the number of sea shells in the 3rd and 11th cell together is 68 and number of shells in 11th cell is 24 more than that of 3rd cell.

(i) What is the difference between the number of sea shells in the 19th and 20th cell ?

(ii)How many sea shells are there in the first cell ?

(iii) How many total sea shells are there in first 13 cells?

OR

What is the number of sea shells in the 7th and 9th cell ?

SECTION – E
Questions 17 to 18 carry 5 mark each.

17. If α and β are the two zeroes of the polynomial $p(x) = x^2 - 2x + 3$, find the quadratic polynomial whose roots are $\frac{\alpha-1}{\alpha+1}$ and $\frac{\beta-1}{\beta+1}$.

18. If the roots of the equation $(a^2 + b^2)x^2 - 2(ac + bd)x + (c^2 + d^2) = 0$ are equal, prove that $ad = bc$.

or

If the equation $(1 + m^2)x^2 + 2mcx + (c^2 - a^2) = 0$ has equal roots, prove that $c^2 = a^2(1 + m^2)$.

End

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