

UNIT TEST – 3

STD : X

TIME : 1 ½ Hrs

SUBJECT : MATHS

MARKS : 50

ALGEBRA

SECTION – I

10 x 1 =10

NOTE: (i) Answer all the 10 questions

(ii) Choose the correct answer from the given four alternatives and write the option code and the corresponding answer

1. If the system $6x - 2y = 3$, $kx - y = 2$ has a unique solution, then
a) $k = 3$ b) $k \neq 3$ c) $k = 4$ d) $k \neq 4$
2. The remainder when $x^2 - 2x + 7$ is divided by $x+4$ is
a) 28 b) 29 c) 30 d) 31
3. The GCD of (x^3+1) and $x^4 - 1$ is
a) x^3-1 b) x^3-1 c) $x + 1$ d) $x - 1$
4. The LCM of a^k, a^{k+3}, a^{k+5} where $K \in \mathbb{N}$ is
a) a^{k+9} b) a^k c) a^{k+6} d) a^{k+5}
5. Let $b = a + c$, then the equation $ax^2 + bx + c = 0$ has equal roots, if
a) $a = c$ b) $a = -c$ c) $a = 2c$ d) $a = -2c$
6. A quadratic equation whose root is 3 is
a) $x^2 - 6x - 5 = 0$ b) $x^2 + 6x - 5 = 0$ c) $x^2 - 5x - 6 = 0$ d) $x^2 - 5x + 6 = 0$
7. The square root of $x^2 + y^2 + z^2 - 2xy + 2yx - 2zx$
a) $|x + y - z|$ b) $|x - y + z|$ c) $|x + y + z|$ d) $|x - y - z|$
8. On dividing $\frac{x^2-25}{x+3}$ by $\frac{x+5}{x^2-9}$ is equal to
a) $(x - 5)(x - 3)$ b) $(x - 5)(x + 3)$ c) $(x + 5)(x - 3)$ d) $(x + 5)(x + 3)$
9. The sum of two zero's of the polynomial $f(x) = 2x^2 + (p+3)x + 5$ is zero then the value of p is
a) 3 b) 4 c) -3 d) -4
10. The square root of $49(x^2 - 2xy + y^2)^2$ is
a) $7|x - y|$ b) $7(x + y)(x - y)$ c) $7(x + y)^2$ d) $7(x - y)^2$

SECTION – II

5 x 2 =10

NOTE: (i) Answer 5 questions

(ii) Question number 17 is compulsory. Select any 4 questions from the first 6 questions

11. Solve : $3x - 5y = -16$ $2x + 5y = 31$

12. Simplify $\frac{x^3}{x-2} + \frac{8}{2-x}$.

13. Frame the quadratic equation whose roots are $7 + \sqrt{3}$ and $7 - \sqrt{3}$

14. Find the L.C.M of $3(a-1)$, $2(a-1)^2$, (a^2-1)

15. Prove that $x - 1$ is a factor of $x^3 - 6x^2 + 11x - 6$.

16. Find the square root of $x^4 + \frac{1}{x^4} + 2$

17. If α and β are the roots of a equation $3x^2 - 5x + 2 = 0$, then find the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$.

(OR)

Find the sum and the product of the roots of the following equations. $8x^2 - 25 = 0$

SECTION – III

6 x 5 =30

NOTE: (i) Answer 6 questions

(ii) Question number 25 is compulsory. Select any 5 questions from the first 7 questions

18. Factorize $x^3 - 5x^2 - 2x + 24$

19. Find the values of m, n the polynomial of perfect square root are $m - nx + 28x^2 + 12x^3 + 9x^4$.

20. The base of the triangle is 4cm longer than its altitude. If the area of the triangle is 48 sq.cm, then find its base and altitude.

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

22. If α and β are the roots of $5x^2 - px + 1 = 0$ and $\alpha - \beta = 1$ then find p.

23. Find the square root of $4x^4 + 8x^3 + 8x^2 + 4x + 1$

24. Three chairs and two tables cost Rs.700 and five chairs and three tables cost Rs.1100. What is the total cost of 2 chairs and 3 tables?

25. Find the L.C.M of $x^3 + y^3$, $x^3 - y^3$, $x^4 + x^2y^2 + y^4$

(OR)

Solve $\frac{15}{x} + \frac{2}{y} = 17$, $\frac{1}{x} + \frac{1}{y} = \frac{36}{5}$, $x \neq 0$, $y \neq 0$ system of equations by elimination method.