Ace of Pace

Sample Paper (Engineering)

Grade X moving to XI

Section (A) : Only One Option Correct

Q.1 If $6x^4-2x^2+7x+10$ is divided by $1-2x$, then remainder will be:

(a) $\frac{107}{8}$ (b) $-\frac{107}{8}$ (c) $\frac{57}{8}$ (d) $-\frac{57}{8}$

Q.2 If one of the zeroes of the quadratic polynomial $Kx^2+(K-2)x+4$ is 1, then the value of K is:

(a) $\frac{1}{2}$ (b) –1 (c) 1 (d) $-\frac{1}{2}$

Q.3 Which of the following is polynomial?

(a) $x^2+\sqrt{x}+7$ (b) $x^3+\frac{1}{x}+2$ (c) $x^{3/2}-2x$ (d) $4x^2+1$

Q.4 If $x^2+bx+c=(x-\alpha)(x-\beta)$, then $\alpha+\beta+\alpha\beta$ is :

(a) $c+b$ (b) $c-b$ (c) bc (d) 0

Q.5 $(3a-2b)(9a^2+6ab+4b^2)=$

(a) $27a^3-8b^3$ (b) $27a^3+8b^3$ (c) $9a^3-4b^3$ (d) $9a^3+4b^3$

Q.6 Find $x^2+\frac{1}{x^2}$ if $x-\frac{1}{x}=1$.

(a) 1 (b) 2 (c) 3 (d) 4

Q.7 What is the common value of x and y for $x+4y=14$ and $7x-3y=5$?

(a) $x = 1, y = 2$ (b) $x = 2, y = 3$ (c) $x = 3, y = 4$ (d) None of these

Q.8 The condition for which the system of linear equation $a_1x+b_1y+c_1=0$ and $a_2x+b_2y+c_2=0$ has no solution is :

(a) $\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$ (b) $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$ (c) $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$ (d) None of these

Q.9 If $\frac{12}{x}+\frac{3}{y}=3$ and $x=6$, then value of y is :

(a) 0 (b) 1 (c) 2 (d) 3

Q.10 For quadratic equation $x^2 - 2x - 35 = 0$, then sum of square of roots is
(a) –2 (b) 35 (c) –74 (d) 74

Q.11 Find the value of discriminant of the quadratic equation $2x^2 - 3x + 1 = 0$.
(a) 0 (b) 1 (c) 2 (d) 3

Q.12 Roots of $2^x + 2^{1-x} = 3$ are :
(a) 1, 2 (b) –1, 0 (c) 0, 1 (d) 0, 2

Q.13 If α and β are root of the equation $x^2 - 5x + 3 = 0$, find the equation whose roots are $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$.
(a) $3x^2 + 19x + 3 = 0$ (b) $3x^2 - 19x + 3 = 0$ (c) $x^2 + 19x + 3 = 0$ (D) $x^2 - 19x + 19 = 0$

Q.14 Two oranges, three bananas and four apples cost Rs. 15. Three oranges, two bananas and one apple cost Rs 10. I bought 3 oranges, 3 bananas and 3 apples. How much did I pay?
(a) Rs. 10 (b) Rs. 8 (c) Rs. 15 (d) cannot be determined

Q.15 Which of the following is not a polynomial in x?
(a) $p(x) = x^2 + \pi x + 7$ (b) $p(x) = 5$
(x) $p(x) = x + \frac{1}{x}$ (d) $p(x) = 4x + 3$

Q.16 For what real values of *k* does the parabola $y = x^2 - 2x + 1$ intersect the line $y = x + k$ at two distinct points.
(a) –2 (b) –1 (c) –3 (d) –3/2

Q.17 Find the number of integral values of x for which $(5x - 1) < (x + 1)^2 < (7x - 3)$
(a) 1 (b) 2 (c) 3 (d) 4

Q.18 If $|3x - 5| = \frac{17}{2}$ then sum of all values of *x* is :
(a) $-\frac{10}{3}$ (b) $\frac{10}{3}$ (c) $\frac{10}{6}$ (d) None of these

Q.19 Graph of $ax + by + c = 0$ is of the form :
(a) Straight line (b) Circle (c) Parabola (d) Ellipse

Q.20 If one zero of $3x^2 - 5x + 6k$ is reciprocal to the other, then the value of *k* is :
(a) 0 (b) $\frac{1}{2}$ (c) $\frac{2}{3}$ (d) $-\frac{1}{2}$

Section (B) : Challenge Yourself

Q.21 If the roots of the equation $x^2-(p-1)x+(p^2-4)=0$ are symmetric about the origin, find the value of p.

(a) 0 (b) 2 (c) 1 (d) –1

Q.22 Find the value of $\sqrt{30+\sqrt{30+\sqrt{30+.....\infty}}}$.

(a) 6 (b) -5 (c) -6 (d) 5

Q.23 Some students planned for a picnic. The budget for food was Rs. 400. But 10 of these failed to go and thus the cost of food for each member increased by Rs. 20. How many students attended the picnic?

(a) 30 (b) 10 (c) 40 (d) 20

Q.24 Let $f(x)$ be a quadratic polynomial such that the roots of $f(x)=0$ are α and β. If the roots of $f(x+1)=0$ are γ and δ, and we are given that $\gamma\delta=2$ and $\gamma+\delta=3$, find $f(x)$.

(a) x^2-5x+6 (b) x^2+6x+5 (c) x^2-4x+3 (d) x^2+6x+5

Q.25 Sum of all distinct roots of $|x^3-3|=|2x|$.

(a) 1 (b) 3 (c) 0 (d) -3

Section (C) : Logical Reasoning

Q.26 Let XYZ be a three-digit number, where $(X + Y + Z)$ is not a multiple of 3.
Then $(XYZ + YZX + ZXY)$ is not divisible by

(a) 3 (b) 9 (c) 37 (d) $X + Y + Z$

Q.27 A man walks down the backside of his house straight 25 metres, then turns to the right and walks 50 metres again, then he turns towards left and again walk 25 metres. If his house face to the East. What is the his direction from the starting point?

(a) South-East (b) South-West (c) North-East (d) North-West

Q.28 2, 6, 12, 20, 30, X, 56
Then X = ?

(a) 42 (b) 40 (c) 47 (d) 54

Q.29 In the sum $\otimes+1\otimes+5\otimes+\otimes\otimes+\otimes1=1\otimes\otimes$ for which digit does the symbol $\otimes$ stand?

(a) 2 (b) 3 (c) 4 (d) 5

Q.30 The letters from A to Z are numbered from 1 to 26 respectively. If GHI = 1578 and DEF = 912, then what is ABC equal to?

(a) 492 (b) 468 (c) 262 (d) 246