POLYNOMIALS

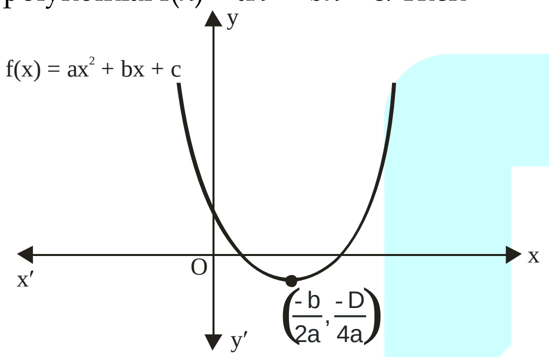
Q.1) If α, β are the zeros of polynomial $f(x) = x^2 - p(x + 1) - c$, then $(\alpha + 1)(\beta + 1) =$

(A) c – 1 (B) 1 – c
(C) c (D) 1 + c

Q.2) If $f(x) = ax^2 + bx + c$ has no real zeros and $a + b + c < 0$, then

(A) c = 0 (B) c > 0
(C) c < 0 (D) c is undefined

Q.3) In the following figure shows the graph of the polynomial $f(x) = ax^2 + bx + c$. Then



(A) a > 0, b > 0 and c > 0
(B) a > 0, b < 0 and c > 0
(C) a > 0, b < 0 and c < 0
(D) a > 0, b > 0 and c < 0

Q.4) For the equation$3x^2 + px + 3 = 0$, $p > 0$, if one of the roots is square of other, then p =

(A) $\frac{1}{3}$ (B) 1
(C) 3 (D) $\frac{2}{3}$

Q.5) If zeros of the polynomial $f(x) = x^3 - 3px^2 + qx - r$ are in A.P., then

(A) $2p^3 = pq - r$ (B) $2p^3 = pq + r$
(C) $p^3 = pq - r$ (D) none of these

Q.6) If α, β, γ are the zeros of the polynomial $f(x) = ax^3 + bx^2 + cx + d$, then $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma} =$

(A) $-\frac{b}{d}$ (B) $\frac{c}{d}$
(C) $-\frac{c}{d}$ (D) $-\frac{c}{a}$

Q.7) What must be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$, so that the result is exactly divisible by $2x^2 + x - 1$ is

(A) – 5 (B) – 3
(C) – 6 (D) – 8

Q.8) If the product of the roots of the equation $(a + 1)x^2 + (2a + 3)x + (3a + 4) = 0$ is 2, then the sum of roots is

(A) 1 (B) – 1
(C) 2 (D) – 2

Q.9) If α, β are the roots of the equation $ax^2 + bx + c = 0$, then $\frac{\alpha}{\alpha\beta + b} + \frac{\beta}{a\alpha + b}$ is equal to

(A) $\frac{2}{a}$ (B) $\frac{2}{b}$
(C) $\frac{2}{c}$ (D) $-\frac{2}{a}$

Q.10) The polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ when divided by (x - 4) leaves remainders R_1 & R_2 respectively then value of 'a' if $2R_1 - R_2 = 0$.

(A) $-\frac{18}{127}$ (B) $\frac{18}{127}$
(C) $\frac{17}{127}$ (D) $-\frac{17}{127}$

Q.11) The values of a & b so that the polynomial $x^3 - ax^2 - 13x + b$ is divisible by (x - 1) & (x + 3) are

(A) a = 15, b = 3 (B) a = 3, b = 15
(C) c = - 3, b = 15 (D) a = 3, b = - 15

Q.12) If the sign of 'a' is positive in a quadratic equation then its graph should be =

(A) parabola open upwards
(B) parabola open downwards
(C) parabola open leftwards
(D) can't be determined

Q.13) The graph of polynomial $y = x^3 - x^2 + x$ is always passing through the point -

(A) (0, 0) (B) (3, 2)
(C) (1, -2) (D) all of these

Q.14) How many time, graph of the polynomial f(x) = x^3 - 1 will intersect X-axis -
(A) 0 (B) 1
(C) 2 (D) 4

Q.15) The sum and product of zeros of the quadratic polynomial are – 5 and 3 respectively the quadratic polynomial is equal to -
(A) $x^2 + 2x + 3$ (B) $x^2 – 5x + 3$
(C) $x^2 + 5x + 3$ (D) $x^2 + 3x – 5$

Q.16) On dividing $x^3 – 3x^2 + x + 2$ by polynomial g(x), the quotient and remainder were x – 2 and 4 – 2x respectively then g(x) :
(A) $x^2 + x + 1$ (B) $x^2 + x – 1$
(C) $x^2 – x – 1$ (D) $x^2 – x + 1$

Q.17) If α and β are the zeros of the polynomial f(x) = $15x^2 – 5x + 6$ then $\left(1+\frac{1}{\alpha}\right)\left(1+\frac{1}{\beta}\right)$ is equal to
(A) $\frac{13}{3}$ (B) $\frac{13}{2}$
(C) $\frac{16}{3}$ (D) $\frac{15}{2}$

Q.18) If the parabola f(x) = $ax^2 + bx + c$ passes through the points (-1, 12), (0, 5) and (2, -3) , the value of a + b + c is –
(A) - 4 (B) -2
(C) Zero (D) 1

Q.19) If α, β are zeros of $ax^2 + bx + c$ then zeros of $a^3x^2 + abcx + c^3$ are -
(A) $\alpha\beta, \alpha+\beta$ (B) $\alpha^2\beta, \alpha\beta^2$
(C) $\alpha\beta, \alpha^2\beta^2$ (D) α^3, β^3

Q.20) When $x^{200} + 1$ is divided by $x^2 + 1$, the remainder is equal to –
(A) x + 2 (B) 2x – 1
(C) 2 (D) - 1

Q.21) If c, d are zeros of $x^2 – 10ax – 11b$ and a, b are zeros of $x^2 – 10cx – 11d$, then value of a + b + c + d is –
(A) 1210 (B) -1
(C) 2530 (D) -11

Q.22) If the ratio of the roots of polynomial $x^2 + bx + c$ is the same as that of the ratio of the roots of $x^2 + qx + r$, then –
(A) $br^2 = qc^2$ (B) $cq^2 = rb^2$
(C) $q^2c^2 = b^2r^2$ (D) bq = rc

Q.23) If α, β, γ are such tha $\alpha+\beta+\gamma=2$, $\alpha^2+\gamma^2=6$, $\alpha^3+\beta^3+\gamma^3=8$, then $\alpha^4+\beta^4+\gamma^4$ is equal to –
(A) 10 (B) 12
(C) 18 (D) None of these

Q.24) If α, β are the roots of $ax^2 + bx + c$ and $\alpha+k$, $\beta+k$ are the roots of $px^2 + qx + r$, then k =
(A) $-\frac{1}{2}\left[\frac{a}{b}-\frac{p}{q}\right]$ (B) $\left[\frac{a}{b}-\frac{p}{q}\right]$
(C) $\frac{1}{2}\left[\frac{b}{a}-\frac{q}{p}\right]$ (D) $(ab-pq)$

Q.25) If $x^2 – ax + b = 0$ and $x^2 = px + q = 0$ have a root in common and the second equation has equal roots, then –
(A) b + q = 2ap (B) $b+q=\frac{ap}{2}$
(C) b + q = ap (D) None of these

Q.26) If the sum of the two zeros of $x^3 + px^2 + qx + r$ is zero, then pq =
(A) – r (B) r
(C) 2r (D) –2r

Q.27) Let $a \neq 0$ and p(x) be a polynomial of degree grater than 2. If p(x) leaves remainders a and –a when divided respectively by x + a and x – a

, the remainder when p(x) is divided by $x^2 - a^2$ is

(A) 2x (B) – 2x
(C) x (D) – x

Q.28) The coefficient of x in $x^2 + px + q$ was taken as 17 in place of 13 and it's zeros were found to be – 2 and – 15. The zeros of the original polynomial are -

(A) 3, 7 (B) – 3 , 7
(C) – 3 , – 7 (D) – 3, – 10

Q.29) Let α, β be the zeros of $x^2 + (2 - \lambda)x - \lambda$. The values of λ for which $\alpha^2 + \beta^2$ is minimum is

(A) 0 (B) 1
(C) 2 (D) 3

Q.30) If $\alpha \neq \beta$ and $\alpha^2 = 5\alpha - 3, \beta^2 = 5\beta - 3$, then the polynomial whose zeros are $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$ is :

(A) $3x^2 - 25x + 3$ (B) $x^2 - 5x + 3$
(C) x2+5x – 3 (D) $3x^2 - 19x + 3$

Answer Sheet

Q.1	A	Q.11	B	Q.21	A
Q.2	C	Q.12	A	Q.22	B
Q.3	B	Q.13	A	Q.23	C
Q.4	C	Q.14	B	Q.24	C
Q.5	A	Q.15	C	Q.25	B
Q.6	C	Q.16	D	Q.26	B
Q.7	C	Q.17	A	Q.27	D
Q.8	B	Q.18	C	Q.28	D
Q.9	D	Q.19	B	Q.29	B
Q.10	B	Q.20	C	Q.30	D