Part B

I. Multiple Choice Questions.

Write the 'CAPITAL LETTERS' showing the answer in the bracket provided against each question.

1. The remainder, when the rational integral function f(x) is divided by (x-a) is [ ]
(A) f(a) (B) f(-a) (C) 0 (D) f (x-a)

2. If $f(x) = x^2-3x+2$, then f (-2) = [ ]
(A) 12 (B) 4 (C) -12 (D) 0

3. If $f(\frac{b}{a}) = 0$, then the factor of f(x) is [ ]
(A) ax-b (B) ax+b (C) bx+a (D) bx-a

4. If (x+1) is a factor to $ax^4+bx^3+cx^2+dx+e^-$ then [ ]
(A) a + b + c + d + e = 0 (B) a + b + c = d + e
(C) a + c + e = b + d (D) None of the above

5. The quadratic inequation satisfying the inequation $1 < x < 5$ is [ ]
(A) $x^2 + 6x + 5 < 0$ (B) $x^2-6x + 5 < 0$
(C) $x^2 + 6x + 5 > 0$ (D) $x^2-6x + 5 > 0$

6. If sum of the coefficients of terms of 'x' in f(x) is zero, then ..... is a factor [ ]
(A) x+1 (B) x-1 (C) 2x+1 (D) 2x-1

SOLUTIONS: 1-A; 2-A; 3-A; 4-C; 5-B; 6-B

7. The sum of the roots of $2x^2- 9x + 8 = 0$ is [ ]
(A) $\frac{2}{9}$ (B) $\frac{-9}{2}$ (C) $\frac{-2}{9}$ (D) $\frac{9}{2}$

8. Product of the roots of $x^2-2x = 15$ is [ ]
(A) 15 (B) −15 (C) $\frac{15}{2}$ (D) $\frac{15}{-2}$

9. If $x^n -y^n$ is divisible by x + y, then 'n' is [ ]
(A) Even number (B) Odd number
(C) Any natural number (D) None

10. If ${}^{n}C_{13} = {}^{n}C_{7}$ then the value of 'n' is [ ]
(A) 13 (B) 7 (C) 6 (D) 20

11. The value of ${}^{6}C_{4}$ is [ ]
(A) 15 (B) 6 (C) 4 (D) 10

12. If the discriminant of a quadratic equation is negative, then the roots are [ ]
(A) Real and equal (B) Real and unequal
(C) Imaginary (D) None of the above

13. The quadratic equation, whose roots are 2 and -5 are [ ]
(A) $x^2 + 3x -10 = 0$ (B) $x^2 - 3x - 10 = 0$
(C) $x^2 + 3x +10 = 0$ (D) $x^2 - 3x + 10 = 0$

SOLUTIONS: 7-D; 8-B; 9-A; 10-D; 11-A; 12-C; 13-A;

14. Number of terms in the expansion of $\left(2x^2-\frac{4}{x^5}\right)^{10}$ is [ ]
(A) 10 (B) 11 (C) 9 (D) 0

15. Middle term in the expansion of $\left(\frac{x}{y}+\frac{y}{x}\right)^8$ is [ ]
(A) 5^{th} term (B) 4^{th} term (C) 6^{th} term (D) 4^{th} & 5^{th} terms

16. The curve $y = 2x^2$ goes through the quadrant [ ]
(A) I, II (B) II, III (C) III, IV (D) I, IV

17. The graph of a quadratic equation $ax^2+bx+c = 0$ touches the X-axis in one point of the value of the discriminant is [ ]
(A) Equal to zero (B) Greater than zero
(C) Less than zero (D) None of the above

18. The graph of $y = mx^2$ ($m > 0$) is symmetric about [ ]
(A) X-axis (B) Y-axis (C) X and Y axes (D) None of the above

19. $^5C_4 + {}^5C_1$ [ ]
(A) 5 (B) 9 (C) 6 (D) 10

20. If the Number of terms in the expansion of $(x+y)^n$ are 8 then the value of 'n' is [ ]
(A) 9 (B) 8 (C) 7 (D) 10

SOLUTIONS: 14-B; 15-A; 16-A; 17-A; 18-B; 19-D; 20-C.

II. Fill in the Blanks

1. If $f(x) = x^2 + 2x - k$ and $f(2) = 8$, then k = ...
2. If the roots of the equation $px^2+qx+r = 0$ are equal then .....
3. If $x+1$ is a factor of ax^2+bx+c then .....
4. In a Pascal triangle each row of coefficients is bounded on both sides by .....
5. The inequation whose solution is $-3 \le x \le 4$ is .....
6. If $a_0+a_1+ ..... + a_n = 0$ then the factor of the polynomial..... $a_0x^n+ a_1x^{n-1} + ... + a_n$ is .....
7. The graph of $y = x^2$ is a .....
8. The last term in the expansion of $\left(x+\frac{1}{x}\right)^7$ is .....
9. If $^{10}C_{2n} = {}^{10}C_{n+4}$ then n = ...
10. The coefficient of x^2 in the expansion of $(1+x)^{10}$ is .....
11. The remainder when f(x) is divided by 3x+2 is .....
12. In the expansion of $\left(2x+\frac{1}{3x}\right)^4$, $\frac{8}{3}$ is the coefficient of .....

SOLUTIONS:

1) 0(Zero) **2)** $q^2 = 4pr$ **3)** a-b+c = 0 **4)** 1 **5)** $x^2-x-12 \le 0$ **6)** x-1
7) Parabola **8)** $\frac{1}{x^7}$ **9)** 2 **10)** $^{10}C_2$ or 45 **11)** $f\left(\frac{-2}{3}\right)$ **12)** third term

13. $x = my^2$ is symmetric about ..... axis.
14. $x = my^2$ ($m < 0$) lies in the Quadrants .....
15. If $x^n + y^n$ is divisible by x+y, then 'n' is .....

16. The x-coordinates of the points of intersection of the parabola $y = x^2$ and the straight line $y = 4x - 3$ gives the solution of the quadratic equation.

17. If ${}^{10}C_6 = {}^{10}C_r$ then the value of r other than 6 is ..... .

18. If the parabola $y = 2x^2 - 3$ then k = ...

19. Sum of the roots of $\sqrt{3}x^2 + 9x + 6\sqrt{3} = 0$ is .....

20. If the number of terms in the expansion of a binomial is 4, then the exponent of the binomial is -------

SOLUTIONS:

13) X-axis **14)** II & III **15)** An odd number

16) $x^2-4x+3 = 0$ **17)** 4 **18)** 5 **19)** $-3\sqrt{3}$ **20)** 3

III. Match the following

A)

Group-A	**Group-B**
1. Discriminant of the equation $2x^2+3x+5 = 0$ is	A) 0
2. Sum of the roots of $6x^2-5 = 0$ is	B) 6
3. Product of the roots of $\sqrt{3}x^2 + 9x + 6\sqrt{3} = 0$ is	C) $3\sqrt{3}$
4. If the roots of $2x^2 + kx + 2 = 0$ are equal then k =	D) $x^2 - 4x + 4 = 0$
5. The quadratic equation whose sum of the roots and the product of the roots are equal is	E) -31
	F) $\frac{5}{6}$
	G) $x^2 + 4x + 4 = 0$
	H) ± 4

SOLUTIONS: 1-E; 2-A; 3-B; 4-H; 5-D.

III. Match the following

B)

Group-A	**Group-B**
6) The number of terms in the expansion of $(x+2y)^8$ is	A) $\frac{1}{x^6}$
7) The middle term in the expansion of $(x+y)^4$ is	B) 4
8) The last term in the expansion of $\left(x+\frac{1}{x}\right)^6$ is	C) 5

9) If the number of terms in the expansion of $\left(2x+\frac{4}{y}\right)^{n+2}$ is 7 then n =

10) The independent term of x in the expansion of $\left(x+\frac{1}{x}\right)^4$ is

D) 6
E) 8
F) $6x^2y^2$
G) 7
H) 9

SOLUTIONS: 6-H; 7-F; 8-A; 9-B; 10-D.

III. Match the following
C)

Group-A	Group-B
11. $^{10}C_7 = {}^{10}C_r$, then r =	A) 1
12. $^5C_4 =$	B) 2
13. $^6C_4 = x + 11$, then x	C) 3
14. $^8C_0 =$	D) 4
15. $^nC_0 + {}^nC_n$	E) 5
	F) 6
	G) 9
	H) 8

SOLUTIONS: 11-C; 12-E; 13-D; 14-A; 15-B.

III. Match the following
D)

Group-A	Group-B
16) $x = 2y^2$ lies in the Quadrants	A) I & II Quadrants
17) $x = -2y^2$ lies in the Quadrants	B) III & IV Quadrants
18) $y = 2x^2$ lies in the Quadrants	C) I & IV Quadrants
19) $y = -2x^2$ lies in the Quadrants	D) II & III Quadrants
20) $y = mx^2$ symmetric about	E) I & III Quadrants

F) II & IV Quadrant

G) X-axis

H) Y-axis

SOLUTIONS: 16-C; 17-D; 18-A; 19-B; 20-H.