

MATHEMATICS
TEST PAPER
CLASS - IX
POLYNOMIALS [I]

Time: 40Min **MM: 20**



- Note:** (a) Section – A Each question carries 1 mark
(b) Section – B Each question carries 2 marks
(c) Section – C Each question carries 3 marks
(d) Section – D Each question carries 4 marks

Section [A]

1. Do as directed:

- (a) Write the degree of the polynomials: $(2t + 1)(5t - 7)$
(b) What is the degree of a zero polynomial?

2. Do as directed:

- (a) Find the value of a if $(x - 2)$ is a factor of $p(x) = x^2 + 3x + 5a$
(b) Find the remainder if $x^{51} + 51$ is divided by $x + 1$

Section [B]

3. Simplify :

- (a) If $p(x) = x^2 - 4x + 3$, evaluate $p(2) - p(-1) + p(\frac{1}{2})$
(b) Check whether $g(x)$ is a factor of $p(x)$ or not, where
 $p(x) = 8x^3 - 6x^2 - 4x + 3$, $g(x) = \frac{x}{3} - \frac{1}{4}$

4. Simplify :

- (a) $(a + b + c)^2 - (a - b - c)^2$
(b) $(\frac{1}{4})^3 + (\frac{1}{3})^3 - (\frac{7}{12})^3$ Without actual calculation.

Section [C]

5. Factorise :

- (a) $y^3 - 2y^2 - 29y - 42$, using factor theorem.
(b) $2x^3 + 3x^2 - 8x + 3$ Using factor theorem.

6. Do as directed:

- (a) If the polynomials $az^3 + 4z^2 + 3z - 4$ and $z^3 - 4z + a$ leave the same remainder when divided by $z - 3$, find the value of a .
(b) If remainder is same when $p(x) = x^3 + 8x^2 + 17x + ax$ is divided by $(x + 2)$ and $(x + 1)$

Section [D]

7. Simplify

- (a) If $a + b = 12$ and $ab = 27$ find the value of $a^3 + b^3$
(b) If $a^2 + b^2 + a^2 = 90$ and $a + b + c = 20$ find $ab + bc + ca$

8. Do as directed:

- (a) Verify that: $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$
(b) Determine what must be added to $(x^3 - 3x^2 + 4x - 13)$ to obtain a polynomial which is exactly divisible by $(x - 3)$