Mathematics

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(Chapter – 2) (Polynomials) (Practice Test 5)

(Class X)

Time: 2 hours **M. M: 50**

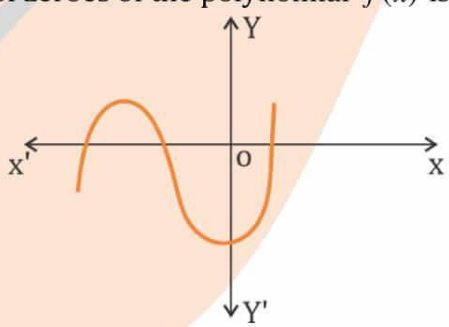
General Instructions:

- This question paper contains four sections: A, B, C and D. Each part is compulsory.
- Section A has 10 MCQ of one mark each.
- Section B has 5 questions of two marks each.
- Section C has 6 questions of three marks each.
- Section D has 5 questions of five marks each, attempt any 3 out of 5.
- There is no negative marking.

[Section – A]

1. The maximum number of zeroes that a polynomial of degree 4 can have is
   (A) one (B) two (C) three (D) four

2. In fig. given below, the number of zeroes of the polynomial $f(x)$ is



   (A) 1 (B) 2 (C) 3 (D) none

3. The graph of the polynomial ax^2+bx+c is an upward parabola if
   (A) a > 0 (B) a < 0 (C) a = 0 (D) a = 1

4. If α, β are the zeroes of the polynomial x^2-16, then $\alpha\beta(\alpha+\beta)$ is
   (A) 0 (B) 4 (C) – 4 (D) 16

5. A polynomial of degree 3 is called
   (A) A linear polynomial (B) a quadratic polynomial
   (C) a cubic polynomial (D) a biquadratic polynomial

6. If a polynomial of degree 4 is divided by quadratic polynomial, the degree of the remainder is
   (A) ≤ 1 (B) ≥ 1 (C) 2 (D) 4

7. If a – b, a and a + b are zeroes of the polynomial $f(x)=2x^3-6x^2+5x-7$, then value of a is
   (A) 1 (B) 2 (C) – 5 (D) 7

8. Dividend is equal to
   (A) Divisor × quotient + remainder (B) divisor × quotient
   (C) divisor × quotient - remainder (D) divisor × quotient × remainder

9. A quadratic polynomial whose sum of the zeroes is 2 and product is 1 is given by
(A) x^2-2x+1 (B) x^2+2x+1 (C) x^2+2x-1 (D) x^2-2x-1

10. If α and $\frac{1}{\alpha}$ are the zeroes of the polynomial ax^2+bx+c, then value of c is
(A) 0 (B) a (C) – a (D) 1

[Section – B]

11. Find the zeroes of the polynomial x^2-3 and verify the relationship between the zeroes and the coefficients.
12. Find the quadratic polynomial, the sum and product of whose zeroes are -3 and 2, respectively.
13. Divide $2x^2+3x+1$ by $x+2$.
14. If one zero of the polynomial $5z^2 + 13z - p$ is reciprocal of the other, then find p.
15. Give example of polynomials p(x), g(x), q(x), r(x), which satisfy the division algorithm and deg p(x) = deg q(x)

[Section – C]

16. Verify that 3, -1, $-\frac{1}{3}$ are the zeroes of the cubic polynomial p(x) = $3x^3-5x^2-11x-3$, and then verify the relationship between the zeroes and the coefficients.
17. Divide $3x^2-x^3-3x+5$ by $x-1-x^2$, and verify the division algorithm
18. Find all zeroes of $2x^4-3x^3-3x^2+6x-2$, if you know that two of its zeroes are $\sqrt{2},-\sqrt{2}$.
19. If the polynomial $x^4-6x^3+16x^2-25x+10$ is divided by another polynomial x^2-2x+k the remainder comes out to be $x+a$, find k & a.
20. If two zeroes of the polynomial $x^4-6x^3+26x^2+138x-35$ are $2\pm\sqrt{3}$, find other zeroes.
21. Write a quadratic polynomial, sum of whose zeroes is $2\sqrt{3}$ and product is 5.

[Section – D]

22. α,β,γ are zeroes of polynomial x^3+px^2+qx+2 such that $\alpha.\beta+1=0$. Find the value of $2p+q+5$.
23. Two zeroes of cubic polynomial ax^3+3x^2-bx-6 are –1 and –2. Find the third zero and value of a and b.s
24. Find the polynomial of least degree which should be subtracted from the polynomial $x^4+2x^3-4x^2+6x-3$ so that it is exactly divisible by x^2-x+1.
25. If 1 and –1 are zeroes of polynomial $Lx^4+Mx^3+Nx^2+Rx+P$, show that $L+N+P=M+R=0$
26. If $x+a$ is a factor of the polynomial x^2+px+q and x^2+mx+n prove that $a=\frac{n-q}{m-p}$.

Hints and Answers

Section – A

1. 4
2. 3
3. a < 0
4. 0
5. A cubic polynomial
6. ≤ 1
7. 1
8. Divisor × quotient + remain
9. x^2-2x+1
10. 0

Section – B

11. $x=\sqrt{3}, x=-\sqrt{3}$
12. x^2+3x+2
13. quotient = $2x-1$, remainder = 3
14. -5
15. $\frac{9}{5}$

Section – C

17. quotient = $x-2$, remainder = 3
18. $\frac{1}{2}, 1$
19. k = 5, a = -5
20. -5, 7
21. $x^2-2\sqrt{3}x+5$

Section – D

22. 0
23. A = 2, b= 5, third zero = $\frac{3}{2}$
24. $x-1$