Mathematics

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(Chapter – 2) (Polynomials) (Practice Test 6)

(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 number of zeroes that polynomial $f(x)=(x-2)^2+4$ can have is:
   (A) 0 (B) 1 (C) 2 (D) 3

2. If p(x) is a polynomial of at least degree one and p(k) = 0, then k is known as
   (A) value of p(x) (B) zero of p(x)
   (C) constant term of p(x) (D) none of these

3. Zeroes of a polynomial can be determined graphically. No. of zeroes of a polynomial is equal to no. of points where the graph of polynomial
   (A) intersects y-axis (B) intersects x-axis
   (C) intersects y-axis or x-axis (D) none of these

4. Graph of a quadratic polynomial is
   (A) straight line (B) circle (C) parabola (D) ellipse

5. If graph of a polynomial does not intersect the x-axis but intersects y-axis in one point, then no, of zeroes of the polynomial is equal to
   (A) 0 (B) 1 (C) 0 or 1 (D) none of these

6. A polynomial of degree n has
   (A) Only one zero (B) exactly n zeroes (C) at most n zeroes (D) more than n zeroes

7. If one of the zeroes of a quadratic polynomial of the form x^2+ax+b is the negative of the other, then it
   (A) has no linear term and the constant term is negative
   (B) has no linear term and the constant term been positive
   (C) can have a linear term but the constant term is negative
   (D) can have a linear term but the constant term is positive

8. The zeroes of the quadratic polynomial $x^2+9x+127$ are
   (A) both positive (B) both negative
   (C) one positive and one negative (D) both equal

9. The number of polynomials having zeroes as 4 and 7 is
   (A) 2 (B) 3 (C) 4 (D) more than 4

10. If one zero of the quadratic polynomials x^2+3x+k is 2, then the value of k is
(A) 10 (B) -10 (C) 5 (D) -5

[Section – B]

11. Find a quadratic polynomial whose zeroes are $5+\sqrt{2}$ and $5-\sqrt{2}$.
12. If a and b are zeroes of quadratic polynomial kx^2+4x+4, find the value of k such that $(a+b)^2-2ab=24$.
13. If one zero of the quadratic polynomials x^2+3x+k is 2, then find the value of k.
14. If m and n are the zeroes of the polynomial $3x^2+11x-4$, find the value of $\frac{m}{n}+\frac{n}{m}$.
15. Find the zeroes of the polynomial $f(x)=4\sqrt{3}x^2+5x-2\sqrt{3}$, and verify the relationship between the zeroes and its coefficients.

[Section – C]

16. If l and m are zeroes of the polynomial $p(x)=2x^2-5x+7$, find a polynomial whose zeroes are $2l+3$ and $2m+3$.
17. If p, q and r are zeroes of polynomial $6x^3+3x^2-5x+1$, then find the value of $\frac{1}{p}+\frac{1}{q}+\frac{1}{r}$.
18. On dividing $x^3-8x^2+20x-10$ by a polynomial g(x), the quotient and the remainder where $x-4$ and 6 respectively. Find g(x).
19. If one zero of the quadratic polynomials $f(x)=4x^2-8kx+8x-9$ is negative of the other, then find the zeroes of $kx^2+3kx+2$.
20. If the product of zeroes of the polynomial ax^2-6x-6 is 4, find the value of a. Find the sum of zeroes of the polynomial.
21. If α and β are zeroes of a polynomial x^2+6x+9, the form a polynomial whose zeroes are -α and -β.

[Section – D]

22. An NGO decided to distribute books and pencils to the students of a school running by some other NGO. For this they collected some amount from different people. The total amount collected is represented by $4x^4+2x^3-8x^2+3x-7$. From this fund each student received an equal amount. The number of students, who received the amount, is represented by $2x^2+x-2$ After distribution, $5x-11$, amount is left with the NGO which they donated to school for their infrastructure. Find the amount received by each student from the NGO.
23. Obtain all other zeroes of the polynomial $x^4-17x^2-36-20$, if two of its zeroes are 5 and – 2.
24. If the polynomial $x^4-6x^3+16x^2-25x+10$ is divided by (x^2-2x+k) the remainder comes out to be $x+a$, find k and a.

25. Check whether the polynomial (t^2-3) is a factor of the polynomial $2t^4+3t^3-2t^2-9t-12$ by Division method.

26. If a and b are the zeroes of the quadratic polynomial $f(x)=x^2-px+q$, prove that

$$\frac{a^2}{b^2}+\frac{b^2}{a^2}=\frac{p^4}{q^2}-\frac{4p^2}{q}+2$$

Hints and Answers

Section – A

1. 2
2. zero of p(x)
3. intersects x-axis
4. parabola
5. 0
6. exactly n zeroes
7. has no linear term and the constant term is negative
8. both negative
9. more than 4
10. –10

Section – B

11. $x^2 - 10x + 21$
12. k = –1 or $\frac{2}{3}$
13. k = –10
14. $-\frac{145}{12}$
15. $(4x - \sqrt{3})(\sqrt{3}x + 2)$

Section – C

16. $x^2 - 16x + 38$
17. 5
18. $x^2 - 4x + 4$
19. – 1, – 2
20. $a = -\frac{3}{2}$
21. $x^2 - 6x + 9$

Section – D

22. $q(x) = 2x^2 - 2$
23. x = – 2 and x = –1
24. a = – 5, k = – 5