EduSahara™ Assignment

Name : Factor Theorem

Chapter : Factor Theorem

Grade : ICSE Grade X

1. The remainder when $(-q)$ is divided by 2 is

   (i) 1 (ii) (-2) (iii) (-1) (iv) 0 (v) 2

2. The remainder when $(-5p^2)$ is divided by $(p+9)$ is

   (i) (-404) (ii) (-403) (iii) (-405) (iv) (-406) (v) (-407)

3. The remainder when $(2k+9)$ is divided by $(k-8)$ is

   (i) 23 (ii) 28 (iii) 24 (iv) 25 (v) 26

4. The remainder when $(5i^2+6i)$ is divided by $(i-1)$ is

   (i) 11 (ii) 14 (iii) 10 (iv) 9 (v) 12

5. The remainder when $(-4g^2+3g-4)$ is divided by $(g+4)$ is

   (i) (-81) (ii) (-80) (iii) (-82) (iv) (-79) (v) (-78)

6. The remainder when $(3v^4+v^3-4v^2+4v-3)$ is divided by (v^2-v-2) is

   (i) $(17v+9)$ (ii) $(16v+9)$ (iii) $(18v+9)$ (iv) $(19v+9)$ (v) $(21v+9)$

7. Factorize $(9x^2-42x+48)$

   (i) $(3x-6)(2x-8)$ (ii) $(3x-6)(3x-8)$ (iii) $(3x-6)(4x-8)$ (iv) $(3x-6)(5x-8)$ (v) $(3x-6)(x-8)$

8. Factorize $(2x^3+26x^2+96x+72)$

   (i) $(x+6)2(-x+6)$ (ii) $(x+6)(4x+2)(3x+6)$ (iii) $(x+6)(x+2)6$ (iv) $(x+6)(2x+2)(x+6)$

   (v) $(x+6)(3x+2)(2x+6)$

9. Factorize $(x^4-13x^3-x^2+373x-360)$

   (i) $(x+5)(-9)(-1)(-8)$ (ii) $(x+5)(3x-9)(3x-1)(3x-8)$ (iii) $(x+5)(x-9)(x-1)(x-8)$

   (iv) $(x+5)(-x-9)(-x-1)(-2x-8)$ (v) $(x+5)(2x-9)(2x-1)(2x-8)$

10. The value of the polynomial $(8v-5)$ at $v=1$ is

    (i) 2 (ii) 4 (iii) 1 (iv) 6 (v) 3

11. The value of the polynomial $(4r^2-r+4)$ at $r=(-4)$ is

    (i) 73 (ii) 74 (iii) 72 (iv) 71 (v) 69

12. The value of the polynomial $(-5i^3+6i^2+1)$ at $i=4$ is

    (i) -224 (ii) -223 (iii) -220 (iv) -225 (v) -222

13. The value of the polynomial $(-9g^4+9g^3-g^2+7g+6)$ at $g=(-1)$ is

(i) -20 (ii) -17 (iii) -22 (iv) -19 (v) -21

14. Factorize $(x^2+2xa+x+a^2+a-2)$

(i) $(x+a+2)(x+a-1)$ (ii) $(x+a+2)(x-a-1)$ (iii) $(x-a-1)(x+a-2)$ (iv) $(x+a-1)(x-a+2)$

(v) $(x-a+2)(x+a+1)$

15. Factorize $(x^3+3x^2a+3xa^2-x+a^3-a)$

(i) $(x+a)(x-a-1)(x+a+1)$ (ii) $(x-a)(x-a-1)(x+a+1)$ (iii) $(x+a)(x+a-1)(x-a+1)$

(iv) $(x-a)(x+a-1)(x-a+1)$ (v) $(x+a)(x+a-1)(x+a+1)$

16. Factorize $(15x^2+32xy-7y^2)$

(i) $(3x+7y)(5x+y)$ (ii) $(3x-7y)(5x+y)$ (iii) $(3x-7y)(5x-y)$ (iv) $(3x+7y)(5x-y)$

(v) $(3x+7y)(3x-7y)$

17. Find the value of k such that $2x^3 + kx^2 + 12x$ is exactly divisible by $(2x+6)$

(i) 11 (ii) 8 (iii) 12 (iv) 9 (v) 10

18. If 3 and -4 are the zeros of the polynomial $f(x)=2x^4 - 3x^3 + ax^2 + bx$, find the value of a and b

(i) 59 , -30 (ii) -28 , 60 (iii) 61 , -28 (iv) -29 , 60 (v) -29 , 61

19. Find the value of a and b such that $4x^4 + bx^3 - 41x^2 + ax + 10$ is exactly divisible by $(2x^2+3x-2)$

(i) -11 , 4 (ii) 3 , -11 (iii) 3 , -12 (iv) -13 , 2 (v) 4 , -12

20. If -4 is the zero of the polynomial $f(x)=2x^2 + kx - 4$, find k

(i) 6 (ii) 7 (iii) 4 (iv) 9 (v) 8

21. If the polynomial $f(x)=kx^2 - 6x - 10$ is exactly divisible by $(2x-5)$, find k

(i) 1 (ii) 4 (iii) 3 (iv) 6 (v) 5

22. If the polynomial $4x^4 + bx^3 - 5x^2 + ax + 10$ is divided by $(x-3)$, it leaves a remainder 550 . If it is divided by $(x-6)$, it leaves a remainder 7480 . Find the value of a and b

(i) 11 , -22 (ii) -21 , 13 (iii) -20 , 12 (iv) 13 , -20 (v) -21 , 12

23. If the polynomials $-x^2 + ax + 11$ and $ax^2 + x - 19$ leave the same remainder when divided by $(x+3)$, find the value of a

(i) 2 (ii) 3 (iii) 5 (iv) 1 (v) (-1)

24. Which of the following are true?

a) Zero of a polynomial and zero polynomial are synonymous
b) Zero of a polynomial and root of the polynomial are synonymous
c) A linear polynomial in one variable has only one root
d) If (x - a) is a factor of f(x), then f(a) = 0
e) If (x + a) is a factor of f(x), then f(a) = 0
f) A polynomial of degree n has atmost n zeros
g) Zero of a polynomial is the value of the variable for which the polynomial value is zero

(i) {b,c,d,f,g} (ii) {a,b} (iii) {a,f,g} (iv) {a,e,d} (v) {e,c}

25. Which of the following are true?

a) A binomial may have degree 3
b) Every polynomial is a binomial
c) Degree of zero polynomial is zero
d) πr^2 is a monomial
e) A binomial has two and only two terms

(i) {b,a,d} (ii) {b,c,e} (iii) {c,d} (iv) {b,a} (v) {a,d,e}

26. Given $f(z) = (-5z + 5)$, find $f((-4))$

(i) 23 (ii) 26 (iii) 24 (iv) 25 (v) 27

27. Given $f(p) = (-3p^2 - 6p - 5)$, find $f((-4))$

(i) -29 (ii) -30 (iii) -32 (iv) -28 (v) -27

28. Given $f(n) = (4n^3 + 2n^2 - 4)$, find $f((-1))$

(i) -9 (ii) -4 (iii) -5 (iv) -6 (v) -7

29. Given $f(i) = (8i^4 + 5i^3 + 7i^2 - 4i + 6)$, find $f((-3))$

(i) 593 (ii) 595 (iii) 597 (iv) 592 (v) 594

30. If $(x^2 - 1)$ is a factor of $ax^4 + bx^3 + cx^2 + dx + e$, which of the following are true ?

a) a + b + c = 0
b) d + e = 0
c) a + c + e = 0
d) a + b + c = d + e
e) a + b + c + d + e = 0
f) b + d = 0

(i) {d,a,f} (ii) {b,e} (iii) {a,c} (iv) {c,e,f} (v) {b,c,e}

31. Which of the following are true ?

a) If p(a) = 0, then (x + a) perfectly divides p(x)
b) If p(x) is divided by (x - a), the remainder is p(a)
c) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor
d) If the degree of p(x) is less then the degree of d(x), we should not divide p(x) with d(x)

(i) {c,d} (ii) {a,d,b} (iii) {a,b} (iv) {a,c,b} (v) {b,d}

32. Which of the following are possible values for the length and breadth of a rectangle whose area is $(-6x^2-13x-2)$

(i) $(6x+1)(-x-2)$ (ii) $(-5x-6)(-x+2)$ (iii) $(6x-1)(-x-2)$ (iv) $(6x+1)(-x+2)$ (v) $(6x-1)(-x+2)$

33. In which of the cases, $g(x)$ is a factor of $f(x)$?

(i) $f(x)=(-3x^3-4x^2+9x+10), g(x)=(-x+3)$ (ii) $f(x)=(x^3-2x^2-5x+6), g(x)=(-x+1)$

(iii) $f(x)=(3x^3-11x^2+x+15), g(x)=(-x+2)$ (iv) $f(x)=(3x^3-8x^2-x+10), g(x)=(x+2)$

(v) $f(x)=(-3x^3+17x^2-29x+15), g(x)=(x+1)$

34. Which of the following polynomials is a multiple of $(x-2)$?

(i) $(2x^3+7x^2-7x-30)$ (ii) (x^3+5x^2+2x-8) (iii) $(x^3+6x^2+5x-12)$ (iv) $(2x^3+7x^2+x-10)$

(v) $(2x^3+15x^2+37x+30)$

35. Which of the following polynomials has $(x-4)$ as a factor ?

(i) $(8x^3-16x^2-22x+30)$ (ii) $(4x^3+20x^2-4x-20)$ (iii) $(4x^3+16x^2-35x-75)$

(iv) $(2x^3+4x^2-38x-40)$ (v) $(8x^3+12x^2-8x-12)$

36. Find the remainder when $(2x^2-9x+10)$ is divided by $(x-6)$

(i) 28 (ii) 27 (iii) 29 (iv) 30 (v) 26

37. If $f(x)=(9x^3-33x^2+39x-15)$ and $g(x)=(6x^3-33x^2+39x-12)$ have a common factor, find the common factor

(i) $(2x-1)$ (ii) $(x-4)$ (iii) $(3x-3)$ (iv) $(x-1)$ (v) $(3x-5)$

38. Find the quadratic polynomial which when divided by $(2x-5), (x-1), (2x-4)$ leaves remainders of $(-\frac{135}{4})$, $(-36), (-35)$ respectively.

(i) $(2x^2-6x+4)$ (ii) $(2x^2-18x+28)$ (iii) $(x^2-2x-35)$ (iv) $(2x^2+5x-25)$ (v) $(2x^2-7x+5)$

39. Which of the following polynomials is not a multiple of $(x-5)$?

(i) (x^2-4x-5) (ii) (x^2-25) (iii) $(2x^2-9x-5)$ (iv) $(2x^2-5x-3)$ (v) $(x^2-8x+15)$

40. If the polynomial $4x^2 + bx + a$ is divided by $(x+5)$, it leaves a remainder 165. If it is divided by $(2x-2)$, it leaves a remainder -3. Find the value of a and b

(i) 5, -11 (ii) 6, -12 (iii) -11, 6 (iv) -13, 4 (v) 5, -12

Assignment Key

1) (iv)	2) (iii)	3) (iv)	4) (i)	5) (ii)	6) (iii)
7) (ii)	8) (iv)	9) (iii)	10) (v)	11) (iii)	12) (ii)
13) (i)	14) (i)	15) (v)	16) (iv)	17) (v)	18) (iv)
19) (iii)	20) (ii)	21) (ii)	22) (v)	23) (i)	24) (i)
25) (v)	26) (iv)	27) (i)	28) (iv)	29) (v)	30) (iv)
31) (v)	32) (i)	33) (ii)	34) (i)	35) (iv)	36) (i)
37) (iii)	38) (iii)	39) (iv)	40) (v)		