EduSahara™ Assignment

Name : Factor Theorem

Chapter : Factor Theorem

Grade : ICSE Grade X

1. The remainder when $3s$ is divided by (-4) is

   (i) (-1) (ii) 0 (iii) 2 (iv) 1 (v) (-3)

2. The remainder when $(-8z^2)$ is divided by $(z-5)$ is

   (i) (-201) (ii) (-199) (iii) (-198) (iv) (-203) (v) (-200)

3. The remainder when $(-8t+7)$ is divided by $(t+3)$ is

   (i) 34 (ii) 30 (iii) 29 (iv) 31 (v) 32

4. The remainder when $(8x^2-3x)$ is divided by $(x-6)$ is

   (i) 269 (ii) 271 (iii) 270 (iv) 272 (v) 267

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

   (i) 0 (ii) (-2) (iii) (-5) (iv) (-3) (v) (-1)

6. The remainder when $(-4t^4-8t^3-5t^2+6t-7)$ is divided by $(t^2-2t-35)$ is

   (i) $(-911t-6202)$ (ii) $(-909t-6202)$ (iii) $(-908t-6202)$ (iv) $(-905t-6202)$ (v) $(-907t-6202)$

7. Factorize $(x^2-12x+35)$

   (i) $(x-7)(2x-5)$ (ii) $(x-7)(x-5)$ (iii) $(x-7)(-5)$ (iv) $(x-7)(-x-5)$ (v) $(x-7)(4x-5)$

8. Factorize $(2x^3-21x^2+37x+24)$

   (i) $(x-3)(-x+1)(-2x-8)$ (ii) $(x-3)(2x+1)(x-8)$ (iii) $(x-3)(3x+1)(2x-8)$ (iv) $(x-3)(5x+1)(4x-8)$

   (v) $(x-3)(x+1)(-8)$

9. Factorize $(x^4+15x^3+78x^2+160x+96)$

   (i) $(x+4)146$ (ii) $(x+4)(-2x+1)(-2x+4)(-2x+6)$ (iii) $(x+4)(2x+1)(2x+4)(2x+6)$

   (iv) $(x+4)(x+1)(x+4)(x+6)$ (v) $(x+4)(4x+1)(4x+4)(3x+6)$

10. The value of the polynomial $(2p+6)$ at $p=3$ is

    (i) 11 (ii) 10 (iii) 12 (iv) 14 (v) 13

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

    (i) 110 (ii) 109 (iii) 108 (iv) 106 (v) 107

12. The value of the polynomial $(-3z^3+z^2+5)$ at $z=(-5)$ is

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

13. The value of the polynomial $(2k^4-6k^3+6k^2-5k-8)$ at $k=(-3)$ is

(i) 386 (ii) 384 (iii) 383 (iv) 387 (v) 385

14. Factorize $(x^2+2xa+5x+a^2+5a-14)$

(i) $(x-a+7)(x+a+2)$ (ii) $(x+a+7)(x+a-2)$ (iii) $(x-a-2)(x+a-7)$ (iv) $(x+a-2)(x-a+7)$

(v) $(x+a+7)(x-a-2)$

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 $(6x^2+33xy+36y^2)$

(i) $(x-4y)(6x-9y)$ (ii) $(x+4y)(6x-9y)$ (iii) $(x+4y)(x-4y)$ (iv) $(x-4y)(6x+9y)$

(v) $(x+4y)(6x+9y)$

17. Find the value of k such that $4x^4 + 18x^3 - 46x^2 + kx - 288$ is exactly divisible by $(x-4)$

(i) -289 (ii) -287 (iii) -286 (iv) -290 (v) -288

18. If $\frac{3}{2}$ and -1 are the zeros of the polynomial $f(x)=ax^4 + 8x^3 - 38x^2 + bx + 30$, find the value of a and b

(i) 8 , -8 (ii) -7 , 9 (iii) 9 , -8 (iv) 8 , -7 (v) -9 , 7

19. Find the value of a and b such that $4x^4 + 10x^3 + ax^2 + bx - 24$ is exactly divisible by $(2x^2-2x-4)$

(i) -39 , -9 (ii) -41 , -11 (iii) -9 , -40 (iv) -10 , -39 (v) -10 , -40

20. If $(\frac{-4}{3})$ is the zero of the polynomial $f(x)=9x^2 + 6x + k$, find k

(i) -11 (ii) -8 (iii) -5 (iv) -7 (v) -9

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

(i) 3 (ii) 2 (iii) -2 (iv) 1 (v) 0

22. If the polynomial $2x^4 + bx^3 - 26x^2 + x + a$ is divided by $(x-6)$, it leaves a remainder 2772 . If it is divided by $(x-4)$, it leaves a remainder 450 . Find the value of a and b

(i) 4 , 29 (ii) 31 , 5 (iii) 6 , 31 (iv) 30 , 6 (v) 30 , 5

23. If the polynomials $ax^2 - 3x - 67$ and $2x^2 + ax - 4$ leave the same remainder when divided by $(x+3)$, find the value of a

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

24. Which of the following are true?

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

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

25. Which of the following are true?

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

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

26. Given $f(q) = (5q + 7)$, find $f(-2)$

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

27. Given $f(k) = (-3k^2 - 8k - 5)$, find $f(3)$

(i) -57 (ii) -56 (iii) -54 (iv) -55 (v) -59

28. Given $f(v) = (-7v^3 - 3v + 6)$, find $f(2)$

(i) -59 (ii) -56 (iii) -55 (iv) -57 (v) -54

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

(i) 389 (ii) 392 (iii) 391 (iv) 393 (v) 390

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

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

31. Which of the following are true ?

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

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

32. Which of the following are possible values for the length and breadth of a rectangle whose area is $(-8x^2+10x-3)$

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

(v) $(4x+3)(-2x+1)$

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

(i) $f(x)=(2x^3-13x^2+2x+72), g(x)=(-3x+5)$ (ii) $f(x)=(18x^3-69x^2-124x+315), g(x)=(-x+4)$

(iii) $f(x)=(-3x^3-x^2+38x+56), g(x)=(x+2)$ (iv) $f(x)=(12x^3-20x^2-243x+405), g(x)=(3x+7)$

(v) $f(x)=(-6x^3+61x^2-193x+180), g(x)=(2x+9)$

34. Which of the following polynomials is a multiple of $(3x-5)$?

(i) $(18x^3-33x^2-x+10)$ (ii) $(6x^3-11x^2-47x-20)$ (iii) $(6x^3-25x^2+2x+8)$ (iv) $(9x^3+27x^2+8x-20)$

(v) $(3x^3-x^2-34x-40)$

35. Which of the following polynomials has $(2x+2)$ as a factor ?

(i) $(3x^3+3x^2-75x-75)$ (ii) $(3x^3+12x^2-21x-30)$ (iii) $(2x^3+4x^2-26x+20)$

(iv) $(6x^3-30x^2-6x+30)$ (v) $(4x^3-8x^2-4x+8)$

36. Find the remainder when $(6x^2-7x-3)$ is divided by $(x-9)$

(i) 419 (ii) 421 (iii) 418 (iv) 420 (v) 422

37. If $f(x)=(4x^3-32x^2+79x-60)$ and $g(x)=(9x^3-33x^2-14x+8)$ have a common factor, find the common factor

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

38. Find the quadratic polynomial which when divided by $(x+4), (2x+6), (x-3)$ leaves remainders of $18, 6, 60$ respectively.

(i) $(2x^2+14x+24)$ (ii) $(2x^2-18)$ (iii) (x^2+6x+8) (iv) $(3x^2+9x+6)$ (v) $(3x^2-6x-9)$

39. Which of the following polynomials is not a multiple of $(2x-1)$?

(i) $(2x^2+5x-3)$ (ii) $(6x^2-x-1)$ (iii) $(3x^2+7x-6)$ (iv) $(2x^2-11x+5)$ (v) $(6x^2-7x+2)$

40. If the polynomial bx^2+8x+a is divided by $(x+1)$, it leaves a remainder -8. If it is divided by $(3x-5)$, it leaves a remainder $18\frac{2}{3}$. Find the value of a and b

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

Assignment Key

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