



1. Find the value of  $k$  such that  $2x^4 + 5x^3 - 23x^2 + kx$  is exactly divisible by  $(x+5)$

- (i) 13 (ii) 8 (iii) 10 (iv) 11 (v) 9

2. If 5 and -3 are the zeros of the polynomial  $f(x) = bx^4 + 3x^3 - 21x^2 + ax - 60$ , find the value of  $a$  and  $b$

- (i) -83, 1 (ii) -83, 2 (iii) 2, -82 (iv) 0, -84 (v) -82, 1

3. Find the value of  $a$  and  $b$  such that  $2x^4 - 7x^3 - 23x^2 + bx + a$  is exactly divisible by  $(2x^2 - 7x - 15)$

- (i) 60, 28 (ii) 61, 28 (iii) 27, 59 (iv) 29, 61 (v) 60, 29

4. If the polynomial  $f(x) = 3x^2 + kx + 18$  is exactly divisible by  $(3x - 6)$ , find  $k$

- (i) -17 (ii) -12 (iii) -14 (iv) -15 (v) -16

5. If the polynomials  $ax^2 + 2x + 27$  and  $5x^2 + ax - 27$  leave the same remainder when divided by  $(x+2)$ , find the value of  $a$

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

6. Which of the following are true?

- a) A linear polynomial in one variable has only one root
- b) A polynomial of degree  $n$  has at most  $n$  zeros
- c) Zero of a polynomial and zero polynomial are synonymous
- 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) Zero of a polynomial and root of the polynomial are synonymous
- g) Zero of a polynomial is the value of the variable for which the polynomial value is zero

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

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

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

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

8. Which of the following are true ?

- a) If the degree of  $p(x)$  is less than the degree of  $d(x)$ , we should not divide  $p(x)$  with  $d(x)$
  - b) Division of a polynomial with another polynomial stops when the degree of the remainder equals the degree of the divisor
  - c) If  $p(a) = 0$ , then  $(x + a)$  perfectly divides  $p(x)$
  - d) If  $p(x)$  is divided by  $(x - a)$ , the remainder is  $p(a)$
- (i)  $\{a,d\}$  (ii)  $\{b,c,a\}$  (iii)  $\{c,d\}$  (iv)  $\{b,a\}$  (v)  $\{b,d,a\}$

Which of the following are possible values for the length and breadth of a rectangle whose area is

9.  $(10x^2 + 33x + 20)$

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

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

- (i)  $f(x) = (6x^3 - 7x^2 - 105x + 216), g(x) = (-x + 4)$  (ii)  $f(x) = (6x^3 - 31x^2 + 31x + 24), g(x) = (2x + 9)$
- (iii)  $f(x) = (-3x^3 + 29x^2 - 92x + 96), g(x) = (2x + 1)$  (iv)  $f(x) = (2x^3 - 9x^2 + 7x + 6), g(x) = (-3x + 8)$
- (v)  $f(x) = (2x^3 - 11x^2 + 10x + 8), g(x) = (-x + 2)$

11. Which of the following polynomials is a multiple of  $(x+1)$  ?

- (i)  $(x^3 - 5x^2 + 2x + 8)$  (ii)  $(x^3 - 3x^2 - 10x + 24)$  (iii)  $(2x^3 - x^2 - 25x - 12)$  (iv)  $(2x^3 + x^2 - 8x - 4)$
- (v)  $(2x^3 + 11x^2 + 17x + 6)$

12. Which of the following polynomials has  $(3x-1)$  as a factor ?

- (i)  $(6x^3 - 37x^2 + 67x - 30)$  (ii)  $(6x^3 - 47x^2 + 90x - 25)$  (iii)  $(2x^3 - 13x^2 + 6x + 45)$
- (iv)  $(6x^3 - 13x^2 - 21x + 18)$  (v)  $(6x^3 - 49x^2 + 105x - 50)$

13. If  $f(x) = (18x^3 - 51x^2 + 11x + 10)$  and  $g(x) = (6x^3 - 16x^2 + 14x - 4)$  have a common factor, find the common factor

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

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

- (i)  $(x^2 + 6x + 5)$  (ii)  $(3x^2 - 4x - 4)$  (iii)  $(x^2 + 3x - 10)$  (iv)  $(x^2 + 7x + 10)$  (v)  $(3x^2 + 17x + 10)$

## Assignment Key

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1) (iii)	2) (i)	3) (i)	4) (iv)	5) (iii)	6) (iv)
7) (v)	8) (i)	9) (iv)	10) (v)	11) (i)	12) (ii)
13) (i)	14) (ii)				