1. Which of the following expressions is a polynomial?

    a $3x^{1/2} - 4x + 3$

    b $4x^2 - 3\sqrt{x} + 5$

    c $3x^2y - 2xy + 5x^4$

    d $2x^4 + \dfrac{3}{x^2} - 1$

2. Which of the following expressions is a polynomial of degree two?

    a $4x^2 - 2x + 5$

    b $3x^{2/3} + 53\sqrt{x} + 2$

    c $2xy^2 - 3xy + 2x^2y + 6$

    d none

3. The number of terms is a trinomial and a monomial polynomial

    a 1, 3

    b 3, 2

    c 3, 1

    d 3, 3

4. Bi-quadratic polynomial is based on which type of polynomial?

    a Number of terms

    b Number or degree

    c Degree of polynomial

    d Either a or b

5. A rectangular field has its length and breadth are in the ratio 3 : 5. To find its sides when area of the field is 1500 square units, which type of polynomial will be formed?

    a Linear polynomial

    b Quadratic polynomial

    c Bi-quadratic polynomial

    d None

6. The degree of the polynomial
$5x^3 - 6x^3y + 4y^2 - 8$ is

    a 3

    b 2

    c 4

    d Can't determined

7. The maximum number of terms a polynomial of degree can have

    a n

    b $n + 1$

    c $n + 2$

    d Can't say

Polynomials

8. -7 is
   - **a** not a polynomial
   - **b** constant polynomial
   - **c** Polynomial of degree
   - **d** Both 'b' and 'c'

9. $x^4 + x^3 + 7$ is an example of quadratic polynomial?
   - **a** True
   - **b** False
   - **c** Can't say
   - **d** none

10. What is the coefficient of x^3 in the polynomial $x^2 + 5x + 6$?
   - **a** 1
   - **b** 2
   - **c** 0
   - **d** can't say

11. *Consider the statements given below*
   Assertion $2x - 6$ is a linear polynomial and
   Reason $F(n) = ax^2 + bx + c$; is general form of quadratic polynomial.
   Which of the following is correct.
   - **a** A is true and R is correct explanation of A.
   - **b** A and R both are true and R is not correct explanation of A.
   - **c** A is true and R is false.
   - **d** A and R both are false.

12. Which of the following expressions is a polynomial of degree two?
   - **a** $4x^2 - 2x + 5$
   - **b** $3x^{2/3} + 53\sqrt{x} + 2$
   - **c** $2xy^2 - 3xy + 2x^2y + 6$
   - **d** none

13. $x^4 + x^3 + 7$ is an example of quadratic polynomial?
   - **a** True
   - **b** False
   - **c** Can't say
   - **d** none

14. The number of terms is a trinomial and a monomial polynomial
   - **a** 1, 3
   - **b** 3, 2
   - **c** 3, 1
   - **d** 3, 3

Topic Two | Zeroes of a Polynor Factorization and

1. A factor of $x^3 - 1$ is

    a $x - 1$

    b $x^2 + x + 1$

    c either 'a' or 'b'

    d none

2. It $x - 2$ is a factor of $x^2 + 3ax - 2a$, then a is equal to?

    a 2

    b -2

    c 1

    d -1

3. If $(x + a)$ is a factor of $P(x)$, then $P(-a)$ is?

    a 1

    b 0

    c a

    d x

4. $(x + 1)$ is a factor of $x^n + 1$ only if

    a n is odd integer

    b n is even integer

    c n is a negative integer

    d n is a positive integer

5. If both $(x - 2)$ and $\left(x - \dfrac{1}{2}\right)$ are factors of $Px^2 + 5x + r$ thin?

    a $p = r$

    b $p + r = 0$

    c $2p + r = 0$

    d $p + 2r = 0$

6. If $(x^2 - 1)$ is a factor of $ax^4 + bx^3 + cx^2 + dx + c$ then the relation among a, b, c, d and e is?

    a $a + c + e = b + d$

    b $b + d > a + c + e$

    c $a + c + e > b + d$

    d none

7. Given that $x = 2$ is a solution of $x^3 - 7x + 6 = 0$. The other solution are

    a $-1, 3$

    b $1, -3$

    c $1, -2$

    d $-1, -2$

8. The zeroes of polynomial $x^2 - 2x$ are?

    a 2

    b 0

    c 2 and 0

    d 5

9. What will be values of a and b so that the polynomial $x^3 + 10x^2 + ax + b$ is exactly divisible by $x - 1$ as well as $x - 2$?

   a $a = 37,\ b = 2b$

   b $a = -37,\ b = 2b$

   c $a = 37,\ b = -2b$

   d $a = -37,\ b = -2b$

10. For what value of a the polynomials $ax^3 + 4x^2 + 3x - 4$ and $x^3 - 4x + a$. When divided by $(x - 3)$ leave the same remainder?

   a $a = 1$

   b $a = -1$

   c $a = 0$

   d $a = -2$

11. The remainder when
$$P(x) = 4x^4 - 3x^3 - 2x^2 + x - 7$$
is divided by $(x - 1)$ is

   a -7

   b -6

   c 7

   d 6

12. If $(x - 1)$ and $(x + 1)$ exactly divides $ax^2 + 3bx + 1$, then a and b are?

   a $a = 0,\ b = -1$

   b $a = b = -1$

   c $a = -1,\ b = 0$

   d $a = 1,\ b = -1$

13. If $(x + a)$ is a factor of polynomial $p(x)$ then $P(a) = 0$.

   a True

   b False

   c Can't say

   d none

14. If $x^{49} + 49$ is divided by $x + 1$, the remainder is 50.

   a True

   b False

   c partially true

   d none

15. A polynomial of degree n has at most n zeroes.

   a True

   b False

   c Can't say

   d none

1. $f(x) = ax^2 + bx + c = 0$, is a quadratic equation if?

   a $a = 0$

   b $a \neq 0$

   c either 'a' or 'b'

   d $b = 0$

2. For roots of a quadratic equation to be real if and only if?

   a $b^2 \geq 4ac$

   b $b^2 \leq 4ac$

   c $b^2 = ac$

   d none

3. Two factors of $6x^2 + 17x + 5$ are?

   a $(3x - 1)(2x - 5)$

   b $(3x + 1)(2x - 5)$

   c $(2x + 5)(3x - 1)$

   d $(3x + 1)(2x + 5)$

4. The factors of $15x^2 - 26x + 8$ are?

   a $(3x - 4)(5x + 2)$

   b $(3x - 4)(5x - 2)$

   c $(3x + 4)(5x - 2)$

   d $(3x + 1)(2x + 5)$

5. If sum of the roots of an equation (quadratic) is 5 and product of the roots is 6. Then quadratic equation is?

   a $3x^2 - 12x + 18 = 0$

   b $3x^2 - 15x + 18 = 0$

   c $2x^2 - 10x + 14 = 0$

   d $x^2 - 5x + 8 = 0$

6. The quadratic equation $x^2 - 4x + 3 = 0$
   Using splitting the middle term for factorization, then value of middle term is pair after splitting is?

   a $(1, 3)$

   b $(-1, -3)$

   c $(1, -3)$

   d $(3, -1)$

7. The roots of quadratic equation
   $\sqrt{3}x^2 + 11x + 6\sqrt{3} = 0$ is obtained by using the factors?

   a $(x - 3\sqrt{3})(\sqrt{3}x + 2)$

   b $(x - 3\sqrt{3})(\sqrt{3}x - 2)$

   c $(x + 3\sqrt{3})(\sqrt{3}x - 2)$

   d $(x + 3\sqrt{3})(\sqrt{3}x + 2)$

8. If the sum of the roots of the quadratic equation is 4 and product of the roots is 12. Then the equation is?

    a $x^2 + 4x + 3 = 0$

    b $x^2 - 4x - 12 = 0$

    c $3x^2 - 12x + 9 = 0$

    d $3x^2 + 12x + 9 = 0$

9. By using remainder theorem, the quadratic equation $3x^2 - 24x + 36 = 0$ has roots 6 and 2.

The given statement is

    a True

    b False

    c can't say

    d none

10. For roots of a quadratic equation to be real if and only if?

    a $b^2 \geq 4ac$

    b $b^2 \leq 4ac$

    c $b^2 = ac$

    d none

11. Match the following

List I	List II
(A) If α and β are roots of quadratic equation. Then	1. $D < 0$
(B) For root of a quadratic equation to be complex	2. $\alpha + \beta = -\dfrac{b}{a}$
(C) Product of roots of a quadratic equation.	3. ac

then which of the following is true.

    a A-1, B-2, C-3

    b A-2, B-1, C-3

    c A-2, B-3, C-1

    d None

14. If $x^3 + \dfrac{1}{x^3} = 110$, then value of $x + \dfrac{1}{x}$ is?

    a 5

    b 10

    c 15

    d 17

15. If $a + b + c = 4$, $ab + bc + ca = 5$ and $a + b + c = 0$ then value of $a^3 + b^3 + c^3$ is equal to?

    a 0

    b 4

    c $3abc$

    d 2

1. $x^3 + y^3 + z^3 = 3xyz$, if and only if

    a $x = y = z$

    b $x + y = z$

    c $x + y = -z$

    d none

2. $a^3 - b^3 = (a + b)(a^2 - ab + b^2)$. The given identity is?

    a True

    b False

    c Can't say

    d None

3. If $a + b + c = 0$, then $a^3 + b^3 + c^3 - 3abc$ is equal to?

    a 0

    b $6abc$

    c $a^2 + b^2 + c^2 - ab - bc - ca$

    d None

4. A cubic polynomial have maximum …… number of roots and degree is ………?

    a 3, 2

    b 3, 3

    c 2, 3

    d 3, 1

5. Value of 101×99 can be calculated using which of the following algebraic identify?

    a $a^2 + b^2 + 2ab = (a + b)^2$

    b $a^2 + b^2 = (a + b)^2 - 2ab$

    c $(a + b)(a - b) = a^2 - b^2$

    d none

6. If $x + \dfrac{1}{x} = 13$, then value of $x^2 + \dfrac{1}{x^2}$ is equal to?

    a 165

    b 169

    c 167

    d 170

7. Square root of the given expression $\dfrac{(5)^4 - (2)^4}{(5)^2 + (2)^2}$ is?

    a $\sqrt{7}$

    b $\sqrt{3}$

    c $\sqrt{21}$

    d $\sqrt{29}$

8. Value of $\dfrac{(1.5)^2 + (4.7)^2 + 2 \cdot (1.5)^2 (1.7)}{6.2}$ is equal to?

    a 3.2

    b 6.2

    c 4.7

    d 1.5

9. If $P = (2 - a)$, then value of $a^3 + 6ap + p^3 - 8$ is?

    a 0
    b 1
    c 2
    d 3

10. If $(a + b + c) = 9$ and $ab + bc + ca = 23$, then value of $a^3 + b^3 + c^3 - 3abc$ is equal to?

    a 108
    b 207
    c 669
    d 729

11. The maximum number of terms a polynomial of degree can have

    a n
    b $n + 1$
    c $n + 2$
    d Can't say

12. Match the following

List I	List II
A. 98×102 equals	1. $a^3 + b^3 + c^3 - 3abc$
B. $\frac{1}{2}(a + b + c)\{(a - b)^2 + (b - c)^2 + (c - a)^2\}$	2. 18
C. If $a^{1/3} + b^{1/3} + c^{1/3} = 0$ then	3. 9996
D. $(-1)^3 - (2)^3 + (3)^3 = 0$	4. $(a + b + c)^3 = 27abc$

Then which of the following is true?

    a A-1, B-2, C-3, D-4
    b A-3, B-1, C-4, D-2
    c A-2, B-4, C-1, D-3
    d A-4, B-2, C-1, D-3

13. If $\frac{a}{b} + \frac{b}{a} = 1$, then value of $a^3 + b^3$ is?

    a 1
    b −1
    c 1/2
    d 0

14. If $x^3 + \frac{1}{x^3} = 110$, then value of $x + \frac{1}{x}$ is?

    a 5
    b 10
    c 15
    d 17

15. If $a + b + c = 4$, $ab + bc + ca = 5$ and $a + b + c = 0$ then value of $a^3 + b^3 + c^3$ is equal to?

    a 0
    b 4
    c $3abc$
    d 2