Algebraic Expression and Identities

Practice Exercise

1. The product of a monomial and a binomial is a
   (a) monomial (b) binomial
   (c) trinomial (d) None of these

2. In a polynomial, the exponents of the variables are always
   (a) integers
   (b) either (a) or (b)
   (c) non-negative integers
   (d) non-positive integers

3. Constant is a polynomial of degree
   (a) 0 (b) 1
   (c) 3 (d) Not defined

4. In the expression $3a^2 - 4ab + 5b^2 + 7ba$, like terms are
   (a) $-4ab, 7ba$ (b) $3a^2, 5b^2$
   (c) $4ab, 7ba$ (d) $-4ab, -7ba$

5. The degree of the polynomial $5x^3 - 2x^2y^2 + x^2 + 9y^2$ in x and y is
   (a) 3 (b) 2
   (c) 4 (d) None of these

6. A polynomial of degree 2 is called
   (a) quadratic polynomial
   (b) linear polynomial
   (c) cubic polynomial
   (d) biquadratic polynomial

7. Sum of $a - b + ab$, $b + c - bc$ and $c - a - ac$ is
   (a) $2c + ab - ac - bc$ (b) $2c - ab - ac - bc$
   (c) $2c + ab + ac + bc$ (d) $2c - ab + ac + bc$

8. The difference of $x^3 - x^2 + 2x - 19$ and $2x^3 - x^2 + 4x - 6$ is
   (a) $x^3 - 2x + 13$ (b) $-x^3 + 6x^2 - 8x + 12$
   (c) $-x^3 - 2x - 13$ (d) None of these

9. What must be added to $x^2 + 4x - 6$ to get $x^3 - x^2 + 2x - 2$?
   (a) $x^3 + 6x - 8$
   (b) $x^3 - 2x^2 + 2x - 4$
   (c) $x^3 + 2x^2 + 2x - 4$
   (d) $x^3 - 2x^2 - 2x + 4$

10. The product of $2x^2 + x - 5$ and $x^2 - 2x + 3$ is
    (a) $2x^4 + 3x^3 + x^2 + 13x + 15$
    (b) $2x^4 - 3x^3 + x^2 - 13x - 15$
    (c) $2x^3 - 3x^2 - x - 15$
    (d) $2x^4 - 3x^3 - x^2 + 13x - 15$

11. The value of $(29x - 6x^2 - 28) \div (3x - 4)$ is
    (a) $(2x - 7)$ (b) $(-2x + 7)$
    (c) $(2x + 7)$ (d) $(7 + 2x)$

12. What should be subtracted from $p^2 - 6p + 7$ so that it may exactly be divisible by $(p - 1)$?
    (a) 4 (b) -4 (c) 2 (d) -2

13. Square of $9x - 7xy$ is
    (a) $81x^2 + 49x^2y^2$
    (b) $81x^2 - 49x^2y^2$
    (c) $81x^2 + 49x^2y^2 - 126x^2y$
    (d) $81x^2 + 49x^2y^2 - 63x^2y$

14. The expansion of $(5x + y - 3z)^2$ is
    (a) $25x^2 + y^2 + 9z^2 + 10xy + 6yz + 30xz$
    (b) $25x^2 + y^2 - 9z^2 + 10xy - 6yz - 30xz$
    (c) $25x^2 + y^2 + 9z^2 + 10xy - 6yz - 30xz$
    (d) None of the above

15. The value of $(391 \times 391 - 291 \times 291)$ is
    (a) 68200 (b) -68200
    (c) 68280 (d) None of these

16. The simplification of $\dfrac{7.83 \times 7.83 - 1.17 \times 1.17}{6.66}$ gives
    (a) 6 (b) 7 (c) 8 (d) 9

17. If $p + q = 12$ and $pq = 22$, then find $p^2 + q^2$.
    (a) 105 (b) 100 (c) 107 (d) 109

18. If $x - y = 13$ and $xy = 28$, then find $x^2 + y^2$.
    (a) 225 (b) 230 (c) 223 (d) 227

19. The value of $(a + b)^2 + (a - b)^2$ is
    (a) $2a + 2b$ (b) $2a - 2b$
    (c) $2a^2 + 2b^2$ (d) $2a^2 - 2b^2$

20. The value of $(a+1)(a-1)(a^2+1)$ is

(a) a^4-1 (b) a^5-1 (c) a^3-1 (d) a^6-1

21. Simplify $27x^3-(3x-y)^3$.

(a) $27x^2y+y^3-9xy^2$ (b) $27xy^2+y^3-9xy^2$

(c) $27x^2y+y^3-9x^2y$ (d) None of the above

22. If $x-y=5$ and $xy=84$, then find the value of x^3-y^3.

(a) 1385 (b) 1380

(c) 1390 (d) None of these

23. If $a^2+b^2+c^2=15$ and $ab+bc+ca=5$, then find the value of $(a+b+c)^2$.

(a) 25 (b) 26 (c) 27 (d) 28

24. If $a^2+b^2+c^2=ab+bc+ca$, then the value of $a^3+b^3+c^3$ is

(a) $3abc$ (b) $3a^2b^2c^2$

(c) $3(abc)^3$ (d) None of these

25. The cost of a chocolate is ₹ $(x+4)$ and Rohit bought $(x+4)$ chocolates. Find the total amount paid by him in terms of x. If $x=10$, then find the amount paid by him.

(a) $x^2+8x+10$; ₹ 200

(b) $x^2+8x+16$; ₹ 196

(c) $x^2+8x+10$; ₹ 215

(d) $x^2+10x+12$; ₹ 195