FACTORISATION

DIVISION OF ALGEBRAIC EXPRESSIONS

EXERCISE

Q.1 Divide:

(i) $6x^4yz - 3xy^3z + 8x^2yz^4$ by $2xyz$

(ii) $\frac{2}{3}a^2b^2c^2 + \frac{4}{3}ab^2c^3 - \frac{1}{5}ab^3c^2$ by $\frac{1}{2}abc$

Q.2 Divide the polynomial $2x^4 + 8x^3 + 7x^2 + 4x + 3$ by $x + 3$.

Q.3 Divide $10x^4 + 17x^3 - 62x^2 + 30x - 3$ by $2x^2 + 7x - 1$

Q.4 Divide $3y^5 + 6y^4 + 6y^3 + 7y^2 + 8y + 9$ by $3y^3 + 1$ and verify that

Dividend = Divisor × Quotient + Remainder

Q.5 Divide $16x^4 + 12x^3 - 10x^2 + 8x + 20$ by $4x - 3$. Also, write the quotient and remainder.

Q.6 Divide $8y^3 - 6y^2 + 4y - 1$ by $4y + 2$. Also, write the quotient and the remainder.

Q.7 Divide: $a^4 - b^4$ by $a - b$

Q.8 Divide: $x^{4a} + x^{2a}y^{2b} + 4y^{4b}$ by $x^{2a} + x^ay^b + y^{2b}$

Q.9 $(x^{29} - x^{25} + x^{13} - 1)$ is divisible by -

(A) both $(x - 1)$ & $(x + 1)$

(B) $(x - 1)$ but not by $(x + 1)$

(C) $(x + 1)$ but not by $(x - 1)$

(D) neither $(x - 1)$ nor $(x + 1)$

Q.10 Value of k for which $(x - 1)$ is a factor of $(x^3 - k)$.

Q.11 Find the factors of $(8x^3 - 27y^3)$ -

(A) $(2x - 3y)(4x^2 + 9y^2 - 6xy)$

(B) $(2x - 3y)(4x^2 + 9y^2 + 6xy)$

(C) $(2x - 3y)(4x^2 - 9y^2 - 6xy)$

(D) $(2x - 3y)(4x^2 - 9y^2 + 6xy)$

Q.12 Find the factors of $(x^3 + y^3 + 2x^2 - 2y^2)$.

Q.13 Find the factors of $(x^3 - 5x^2 + 8x - 4)$.

Q.14 Find the factors of $(x^4 + 4)$.

Q.15 Find the factors of $(x + y)^3 - (x - y)^3$.

Q.16 If $(x^5 - 9x^2 + 12x - 14)$ is divided by $(x - 3)$, then find the remainder.

Q.17 If $(x^{11} + 1)$ is divided by $(x + 1)$, then find the remainder.

ANSWER KEY

1. (i) $3x^3 - \frac{3}{2}y^2 + 4xz^3$ (ii) $\frac{4}{3}abc + \frac{8}{3}bc^2 - \frac{2}{5}b^2c$

2. $(x + 3)(2x^3 + 2x^2 + x + 1)$

3. $(2x^2 + 7x - 1)(5x^2 - 9x + 3)$

6. $(4y + 2)\left(2y^2 - \frac{5}{2}y + \frac{9}{4}\right) - \frac{11}{2}$

7. $(a + b)(a^2 + b^2)$

8. $x^{2a} - x^a y^b + y^{2b}$

9. $(x - 1)$ but not by $(x + 1)$

10. 1

11. $(2x - 3y)(4x^2 + 9y^2 + 6xy)$

12. $(x + y)(x^2 + y^2 + xy + 2x - 2y)$

13. $(x - 2)^2 (x - 1)$

14. $(x^2 + 2x + 2)(x^2 - 2x + 2)$

15. $2y(3x^2 + y^2)$

16. 184

17. 0