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(Affiliated to CBSE up to +2 Level)

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## Study Material

### Exercise 14.3

Question 1. Carry out the following divisions.

(i)  $28x^4 \div 56x$

(ii)  $-36y^3 \div 9y^2$

(iii)  $66pq^2r^3 \div 11qr^2$

(iv)  $34x^3y^3z^3 \div 51xy^2z^3$

(v)  $12a^8b^8 \div (-6a^6b^4)$

Solution:

$$(i) 28x^4 \div 56x = \frac{28x^4}{56x}$$
$$= \frac{\cancel{2} \times \cancel{2} \times \cancel{7} \times \cancel{x} \times x \times x \times x}{2 \times \cancel{2} \times \cancel{2} \times \cancel{7} \times \cancel{x}} = \frac{x^3}{2}$$

$$(ii) -36y^3 \div 9y^2 = \frac{-36y^3}{9y^2}$$
$$= \frac{\cancel{9} \times 2 \times 2 \times \cancel{3} \times \cancel{3} \times y \times \cancel{y} \times \cancel{y}}{\cancel{9} \times (-) \times \cancel{3} \times \cancel{3} \times \cancel{y} \times \cancel{y}} = -4y$$

$$(iii) 66pq^2r^3 \div 11qr^2 = \frac{66pq^2r^3}{11qr^2}$$
$$= \frac{2 \times 3 \times \cancel{11} \times p \times \cancel{q} \times q \times \cancel{r} \times \cancel{r} \times r}{\cancel{11} \times \cancel{q} \times \cancel{r} \times \cancel{r}}$$
$$= 6pqr$$

$$(iv) 34x^3y^3z^3 \div 51xy^2z^3 = \frac{34x^3y^3z^3}{51xy^2z^3}$$
$$= \frac{2 \times \cancel{17} \times \cancel{x} \times x \times x \times \cancel{y} \times \cancel{y}}{3 \times \cancel{17} \times \cancel{x} \times \cancel{y} \times \cancel{y} \times \cancel{z} \times \cancel{z} \times \cancel{z}} \times y \times \cancel{z} \times \cancel{z} \times \cancel{z} = \frac{2}{3}x^2y$$

$$(v) 12a^8b^8 \div (-6a^6b^4) = \frac{12a^8b^8}{-6a^6b^4}$$

$$\frac{\cancel{6} \times (-) \times \cancel{2} \times 2 \times \cancel{3} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a}}{\cancel{6} \times \cancel{2} \times \cancel{3} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a}} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b}$$
$$= \frac{\cancel{a} \times \cancel{a} \times a \times a \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times b \times b \times b \times b}{\cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a} \times \cancel{a}} \times \cancel{b} \times \cancel{b} \times \cancel{b} \times \cancel{b}$$

$$= -2a^2b^4$$

Question 2. Divide the following polynomial by the given monomial.

(i)  $(5x^2 - 6x) \div 3x$

(ii)  $(3y^8 - 4y^6 + 5y^4) \div y^4$

(iii)  $8(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3) \div 4x^2y^2z^2$

(iv)  $(x^3 + 2x^2 + 3x) \div 2x$

(v)  $(p^3q^6 - p^6q^3) \div p^3q^3$

Solution:

$$\begin{aligned} \text{(i)} \quad (5x^2 - 6x) \div 3x &= \frac{(5x^2 - 6x)}{3x} \\ &= \frac{\cancel{x}(5x - 6)}{3\cancel{x}} = \frac{(5x - 6)}{3} \end{aligned}$$

$$\begin{aligned} \text{(ii)} \quad (3y^8 - 4y^6 + 5y^4) \div y^4 &= \frac{3y^8 - 4y^6 + 5y^4}{y^4} \\ &= \frac{\cancel{y^4}(3y^4 - 4y^2 + 5)}{\cancel{y^4}} \\ &= 3y^4 - 4y^2 + 5 \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad 8(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3) \div 4x^2y^2z^2 &= \frac{8(x^3y^2z^2 + x^2y^3z^2 + x^2y^2z^3)}{4x^2y^2z^2} \\ &= \frac{\cancel{8}^2 \cancel{x^2} \cancel{y^2} \cancel{z^2} (x + y + z)}{\cancel{4} \cancel{x^2} \cancel{y^2} \cancel{z^2}} \\ &= 2(x + y + z) \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad (x^3 + 2x^2 + 3x) \div 2x &= \frac{x^3 + 2x^2 + 3x}{2x} = \frac{\cancel{x}(x^2 + 2x + 3)}{2\cancel{x}} \\ &= \frac{x^2 + 2x + 3}{2} \end{aligned}$$

$$\begin{aligned} \text{(v)} \quad (p^3q^6 - p^6q^3) \div p^3q^3 &= \frac{p^3q^6 - p^6q^3}{p^3q^3} \\ &= \frac{\cancel{p^3}\cancel{q^3}(q^3 - p^3)}{\cancel{p^3}\cancel{q^3}} = q^3 - p^3 \end{aligned}$$