

Chapter—13

Exponents and Powers

1. Fill in the blanks :

(a) $\left(\frac{-2}{3}\right) \times \left(\frac{-2}{3}\right) \times \left(\frac{-2}{3}\right) \times \left(\frac{-2}{3}\right) = \left[\dots\dots\dots \right]^4$

(b) $(-3)^3 \times (-3)^4 = \dots\dots\dots$

2. Evaluate :

(a) Find the value of x :

$$\left(\frac{-7}{5}\right)^{11} \div \left(\frac{-7}{5}\right)^3 = \left(\frac{-7}{5}\right)^{2x+2}$$

(b) Find the value of a :

$$\left[\left(\frac{3}{13}\right)^8\right]^3 = \left(\frac{3}{13}\right)^{a+1}$$

3. Match of column :

Column 'A'

Column 'B'

(a) $x^m \times x^n$

(i) x^{mn}

(b) $x^m \div x^n$

(ii) 1

(c) $(x^m)^n$

(iii) $(xy)^n$

(d) $x^n \times y^n$

(iv) x^{m-n} ($m > n$)

(e) x^0

(v) x^{m+n}

4. Write in the standard form :

(a) The distance between Earth and Moon is 384,000 km.

(b) Speed of light in vacuum is 300,000,000 m/s

(c) 0.0034256

5. Find the value of x :

(a) $5^{\left(\frac{2}{5}\right)} = 5^x$

(b) $(2^6 \div 2^{-3}) \times 2^{14} = 2^x$

6. Simplify :

$$(a) \frac{\left(\frac{4}{7}\right) \times \left(\frac{2}{3}\right)^2}{\frac{4}{9} \times \left(\frac{4}{7}\right)^3}$$

$$(b) \frac{25 \times 5^2 \times t^8}{10^3 \times t^4}$$

7. Simplify :

$$(a) (-3)^2 \times (-5)^2$$

$$(b) [(-16)^6 \div (-16)^3] \times (-16)^{-3}$$

8. Find the value of :

$$(a) 2^\circ \times 3^\circ \times 4^\circ$$

$$(b) 3^\circ \times 5^\circ + 19^\circ$$

$$(c) (7^\circ \div 3^\circ) \times (8^\circ - 5^\circ)$$

$$(d) 4^\circ \times 6^\circ + 100^\circ$$

9. Fill in the blanks :

$$(-19)^{11} \div (-19)^{15} = \frac{1}{(-19)^\square}$$

10. Simplify and write the answer in scientific notation :

$$(a) (5 \times 10^3) \times (3 \times 10^5)$$

$$(b) \frac{4.5 \times 10^6}{0.9 \times 10^5}$$

11. Find m for the following :

$$(a) \left(\frac{8}{9}\right)^5 \times \left(\frac{9}{4}\right)^5 = (2)^m$$

$$(b) (7)^3 \div (2)^m = \left(\frac{7}{2}\right)^3$$

12. Using the standard form, write number 73984 in expanded form.