CHAPTER -12 - EXPONENTS AND POWERS

1. **Find the multiplicative inverse of the following:**

   a) 3^{-4} b) 7^{-2} c) 9^{-9} d) 10^{-80}

2. **Expand the following numbers using exponents**

   a) 18964.63 b) 7064.373

3. **Simplify and write in exponential form**

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

   b) $a^{-8} \times a^{-10} \times a^{-2}$

4. **Express 9^{-3} as a power with the base 3.**

5. **Find the value of:**

   a) $\left[\left(\frac{1}{2}\right)^{\circ} + \left(\frac{1}{5}\right)^{3} + \left(\frac{2}{3}\right)^{2}\right]$

   b) $\left[\left(\frac{1}{3}\right)^{-2} + \left(\frac{1}{2}\right)^{-3}\right] \div \left(\frac{1}{4}\right)^{-2}$

   c) $\left[\left(\frac{9}{5}\right)^{-8} \times \left(\frac{5}{9}\right)^{-5}\right]$

   d) $(9^2 - 4^3) \times \left(\frac{-3}{17}\right)^{2} \times \frac{34}{9}$

6. Simplify :

$$\left[\left(\frac{1}{4}\right)^4 + \left(\frac{1}{4}\right)^3\right] \times \left[\left(\frac{3}{5}\right)^{12} \div \left(\frac{3}{5}\right)^5\right]$$

7. Find x, if $\left(\frac{2}{3}\right)^{-5} \times \left(\frac{2}{3}\right)^{12} = \left(\frac{2}{3}\right)^{3x-2}$

8. Simplify : $\left(\frac{a}{b}\right)^4 \times \left(\frac{4ab}{3a}\right)^2 \times \left(\frac{b}{2a}\right)^3$

9. Evaluate : (a) $\frac{4^{-1/2} \times 2^{1/2} \times 2}{8 \times 8^{-1/2}}$ (b) $\frac{(48)^{-2} \times (64)^{1/2}}{(24)^{-1}}$

10. Write the following in standard form :

(a) 0.0000389 (b) 19280000 (c) $\frac{0.000462}{10^7}$

11. Express the following numbers in usual form :

(a) 2.08×10^{-5} (b) 381624×10^{-6} (c) 9×10^{-7}

12. Simplify :

$$\left(\frac{2}{3}\right)^3 \times \left(\frac{2}{3}\right)^{-2} \left[\left(\frac{1}{2}\right)^2\right]^{-2} \times \frac{1}{24}$$