Chapter 12

Exponents and Powers

Decimal number system:

Decimal fractions:

Fractions in which denominators are powers of 10 known as decimal fractions.

Example:

$\frac{1}{10}$ = 1 Tenth = 0.1

$\frac{1}{100}$ = 1Hundredth = 0.01

Expanded form of decimal number system:

Any decimal number can be written in expanded form by using integral exponents of '10'.

Examples:

3456 in the expanded form can be expressed as follows.

Sol.

3456 = (3 x 1000) + (4 x 100) + (5 x 10) + (6 x 1)

$\therefore$ 3456 = $(3 \times 10^3) + (4 \times 10^2) + (5 \times 10^1) + (6 \times 10^o)$ $(\because 10^o = 1)$

746.853 in the expanded form can be expressed as follows.

Sol.

$746.853 = (7 \times 100) + (4 \times 10) + (6 \times 1) + \frac{8}{10} + \frac{5}{100} + \frac{3}{1000}$

$= (7 \times 10^2) + (4 \times 10^1) + (6 \times 10^o) + \frac{8}{10} + \frac{5}{10^2} + \frac{3}{10^3}$

$= (7 \times 10^2) + (4 \times 10^1) + (6 \times 10^o) + (8 \times 10^{-1}) + (5 \times 10^{-2}) \times (3 \times 10^{-3})$