STD – 9 MATHS

CHAPTER - 1

**NUMBER SYSTEM** 

EXERCISE - 1.6

## 1. Find

(i) 
$$64^{\frac{1}{2}}$$

$$64^{\frac{1}{2}} = (8 \times 8)^{\frac{1}{2}}$$

$$= (8^2)^{\frac{1}{2}}$$

$$=8^{1}(2\times\frac{1}{2}=\frac{2}{2}=1)$$

(ii) 
$$32^{\frac{1}{5}}$$

$$32^{\frac{1}{5}} = (2^5)^{\frac{1}{5}}$$

$$=(2^5)^{\frac{1}{5}}$$

$$=2^{1}(5\times\frac{1}{2}=1)$$

(iii) 
$$125^{\frac{1}{3}}$$

$$125^{\frac{1}{3}} = (5 \times 5 \times 5)^{\frac{1}{3}}$$

$$= (5^3)^{\frac{1}{3}}$$

$$=5^{1}\left(3\times\frac{1}{3}=\frac{3}{3}=1\right)$$

#### 2. Find

(i) 
$$9^{\frac{3}{2}}$$

$$9^{\frac{3}{2}} = (3 \times 3)^{\frac{3}{2}}$$

$$= (3^2)^{\frac{3}{2}}$$

$$=3^3[2\times\frac{3}{2}=3]$$

(ii) 
$$32^{\frac{2}{5}}$$

$$32^{\frac{2}{5}} = (2 \times 2 \times 2 \times 2 \times 2)^{\frac{2}{5}}$$

$$= (2^5)^{\frac{2}{5}}$$

$$=2^{2}[5\times\frac{2}{5}=2]$$

(iii) 
$$16^{\frac{3}{4}}$$

$$16^{\frac{3}{4}} = (2 \times 2 \times 2 \times 2)^{\frac{3}{4}}$$

$$= (2^4)^{\frac{3}{4}}$$

$$= 2^3 \left[ 4 \times \frac{3}{4} = 3 \right]$$

(iv) 
$$125^{-\frac{1}{3}}$$

$$125^{-\frac{1}{3}} = (5 \times 5 \times 5)^{-\frac{1}{3}}$$

$$= (5^3)^{-\frac{1}{3}}$$

$$=5^{-1}[3\times-\frac{1}{3}=-1]$$

$$=\frac{1}{3}$$

# 3. Simplify:

(i) 
$$2^{\frac{2}{3}} \times 2^{\frac{1}{5}}$$

$$=2^{\frac{2}{3}}\times2^{\frac{1}{5}}$$

= 
$$2^{\frac{2}{3} + \frac{1}{5}}$$
 [since,  $a^m \times a^n = a^{m+n}$  laws of exponents]

$$= 2^{\frac{13}{15}} \qquad \left[\frac{2}{3} + \frac{1}{5} = \frac{(2 \times 5 + 3 \times 1)}{3 \times 5} = \frac{13}{15}\right]$$

(ii) 
$$(\frac{1}{3^3})^7$$

$$=(\frac{1}{3^3})^7$$

= 
$$(3^{-3})^7$$
 [since,  $(a^m)^n = a^{m \times n}$  laws of exponents]

$$=3^{-27}$$

(iii) 
$$\frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}}$$

$$\frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}} = 11^{\frac{1}{2} - \frac{1}{4}}$$

$$= 11^{\frac{1}{4}} \qquad \left[ \left( \frac{1}{2} + \frac{1}{4} = \frac{(1 \times 4 - 2 \times 1)}{2 \times 4} = \frac{4 - 2}{8} \right) = \frac{2}{8} = \frac{1}{4} \right]$$

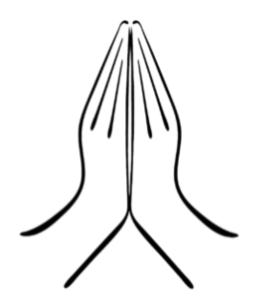
(iV) 
$$\frac{7^{\frac{1}{2}}}{8^{\frac{1}{2}}}$$

$$=7^{\frac{1}{2}}\times8^{\frac{1}{2}}$$

= 
$$(7 \times 8)^{\frac{1}{2}}$$
 [since,  $(a^m \times b^m = (a \times b)^m$  laws of exponents]

$$= 56^{\frac{1}{2}}$$

# Thanks



# For watching