

Ex - 1.6

1) ज्ञात कीजिए :-

$$\begin{aligned}
 \textcircled{i} \quad 64^{\frac{1}{2}} &= (2 \times 2 \times 2 \times 2 \times 2 \times 2)^{\frac{1}{2}} \\
 &= (2^6)^{\frac{1}{2}} \\
 &= (2)^{6 \times \frac{1}{2}} \\
 &= 2^3 \\
 &= 8 \text{ Ans }
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{ii} \quad 32^{\frac{1}{5}} &= (2 \times 2 \times 2 \times 2 \times 2)^{\frac{1}{5}} \\
 &= (2^5)^{\frac{1}{5}} \\
 &= 2^{5 \times \frac{1}{5}} \\
 &= 2^1 \\
 &= 2 \text{ Ans }
 \end{aligned}$$

$$\begin{aligned}
 \textcircled{iii} \quad (125)^{\frac{1}{3}} &= (5 \times 5 \times 5)^{\frac{1}{3}} \\
 &= (5^3)^{\frac{1}{3}} \\
 &= (5)^{3 \times \frac{1}{3}} \\
 &= 5^1 \\
 &= 5 \text{ Ans }
 \end{aligned}$$

2. > ज्ञात कीजिए:-

$$\begin{aligned}
 \text{(i)} \quad (9)^{\frac{3}{2}} &= (3 \times 3)^{\frac{3}{2}} \\
 &= (3^2)^{\frac{3}{2}} \\
 &= (3)^{2 \times \frac{3}{2}} \\
 &= 3^3 \\
 &= 27 \underline{A}
 \end{aligned}$$

$$\begin{array}{r|l}
 2 & 9 \\
 \hline
 2 & 3 \\
 \hline
 & 1
 \end{array}$$

$$\begin{aligned}
 \text{(ii)} \quad 32^{\frac{2}{5}} &= (2 \times 2 \times 2 \times 2 \times 2)^{\frac{2}{5}} \\
 &= (2^5)^{\frac{2}{5}} \\
 &= (2)^{5 \times \frac{2}{5}} \\
 &= 2^2 \\
 &= 4 \underline{A}
 \end{aligned}$$

$$\begin{array}{r|l}
 2 & 32 \\
 \hline
 2 & 16 \\
 \hline
 2 & 8 \\
 \hline
 2 & 4 \\
 \hline
 2 & 2 \\
 \hline
 & 1
 \end{array}$$

$$\begin{aligned}
 \text{(iii)} \quad (16)^{\frac{3}{4}} &= (2 \times 2 \times 2 \times 2)^{\frac{3}{4}} \\
 &= (2^4)^{\frac{3}{4}} \\
 &= (2)^{4 \times \frac{3}{4}} \\
 &= 2^3 \\
 &= 8 \underline{A}
 \end{aligned}$$

$$\begin{array}{r|l}
 2 & 16 \\
 \hline
 2 & 8 \\
 \hline
 2 & 4 \\
 \hline
 2 & 2 \\
 \hline
 & 1
 \end{array}$$

$$\begin{aligned}
 \text{(iv)} \quad (125)^{-\frac{1}{3}} &= (5 \times 5 \times 5)^{-\frac{1}{3}} \\
 &= (5^3)^{-\frac{1}{3}} \\
 &= (5)^{3 \times -\frac{1}{3}} \\
 &= 5^{-1} = \frac{1}{5} \underline{A}
 \end{aligned}$$

$$\begin{array}{r|l}
 5 & 125 \\
 \hline
 5 & 25 \\
 \hline
 5 & 5 \\
 \hline
 & 1
 \end{array}$$

3) सरल कीजिए:-

$$\begin{aligned} \textcircled{i} \quad 2^{\frac{2}{3}} \cdot 2^{\frac{1}{5}} &= (2)^{\frac{2}{3} + \frac{1}{5}} \\ &= (2)^{\frac{10+3}{15}} \\ &= (2)^{\frac{13}{15}} \end{aligned}$$

$$\begin{aligned} \textcircled{ii} \quad \left(\frac{1}{3^3}\right)^7 &= (3^{-3})^7 \\ &= 3^{-21} \end{aligned}$$

$$\begin{aligned} \textcircled{iii} \quad \frac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}} &= (11)^{\frac{1}{2} - \frac{1}{4}} \\ &= (11)^{\frac{2-1}{4}} \\ &= (11)^{\frac{1}{4}} \end{aligned}$$

$$\begin{aligned} \textcircled{iv} \quad 7^{\frac{1}{2}} \cdot 8^{\frac{1}{2}} &= (7 \times 8)^{\frac{1}{2}} \\ &= (56)^{\frac{1}{2}} \end{aligned}$$

समाप्त