

Sample Qn Set 01

$$\begin{aligned} \text{Q1. } (2ab)^2 \cdot (a^2b^{-2})^5 &= 2^2 a^2 b^2 \cdot (a^2)^5 \cdot (b^{-2})^5 \\ &= 4 \underline{a^2} \underline{b^2} \cdot \underline{a^{10}} \cdot \underline{b^{-10}} \\ &= 4a^{2+10} \cdot b^{2-10} = 4a^{12} b^{-8} \\ &= \frac{4a^{12}}{b^8} \quad \# \end{aligned}$$

$$\begin{aligned} \text{Q2. } \left(\frac{m}{3n}\right)^5 \cdot \left(\frac{8n^3}{m^{15}}\right)^{1/3} &= \frac{m^5}{3^5 n^5} \cdot \frac{8^{1/3} \cdot (n^3)^{1/3}}{(m^{15})^{1/3}} \\ &= \frac{\cancel{m^5}}{243 n^5} \cdot \frac{2 n^1}{\cancel{m^5}} \qquad 3^5 = 3^4 \cdot 3^1 \\ &= \frac{2}{243 n^{5-1}} = \frac{2}{243 n^4} \quad \# \qquad = (3^2)^2 \cdot 3 \\ & \qquad \qquad \qquad = 9^2 \cdot 3 = 81 \times 3 \\ & \qquad \qquad \qquad = 243 \end{aligned}$$

$$Q3. \quad \sqrt{3x^5} \cdot \sqrt{\frac{2x}{27y^{-2}}} = \sqrt{\cancel{3}x^5 \cdot \frac{2x}{\cancel{27}y^{-2}}}$$

$$= \sqrt{\frac{2x^{5+1}}{9y^{-2}}} = \sqrt{\frac{2x^6}{9y^{-2}}}$$

$$= \frac{\sqrt{2x^6y^2}}{\sqrt{9}} = \frac{\sqrt{2} \cdot \sqrt{x^6} \cdot \sqrt{y^2}}{\sqrt{9}}$$

$$= \frac{\sqrt{2} x^3 y}{3}$$

$$= \frac{2^{1/2} x^3 y}{3} \quad \#$$

$$x, y > 0$$

$$\sqrt{y^2} = y$$

$$\sqrt{x^6} = \sqrt{(x^3)^2}$$

$$= x^3$$