

JANOS - MAY 09

$$1) i) \left(\frac{1}{3}\right)^{-2} = \left(\frac{3}{1}\right)^2$$

$$= 9$$

$$ii) 16^{\frac{3}{4}}$$

$$= \left(\sqrt[4]{16}\right)^3$$

$$= 2^3 = 8$$

$$2) i) a^0 = 1$$

$$ii) a^6 \div a^{-2}$$

$$= a^{6-(-2)}$$

$$= a^8$$

$$iii) (9a^6b^2)^{-\frac{1}{2}}$$

$$= \frac{1}{(9a^6b^2)^{\frac{1}{2}}}$$

$$= \frac{1}{3a^3b}$$

3) i)

$$\frac{16^{\frac{1}{2}}}{81^{\frac{3}{4}}}$$

$$= \frac{\sqrt[2]{16}}{(\sqrt[4]{81})^3}$$

$$= \frac{4}{3^3} = \frac{4}{27}$$

$$3) ii) \frac{12(a^3b^2c)^4}{4a^2c^6}$$

$$= \frac{12a^{12}b^8c^4}{4a^2c^6}$$

$$= 3a^{10}b^8c^{-2}$$

$$\text{or } \frac{3a^{10}b^8}{c^2}$$

4) i)

$$25^{\frac{3}{2}}$$

$$= \left(\sqrt[2]{25}\right)^3$$

$$= 5^3$$

$$= 125$$

$$4ii) \left(\frac{7}{3}\right)^{-2} = \left(\frac{3}{7}\right)^2$$

$$= \frac{9}{49}$$

$$5)i) 3a^3b \times 4(ab)^2$$

$$= 3a^3b \times 4a^2b^2$$

$$= 12a^5b^3$$

$$6)i) a^3 = 64x^{12}y^3$$

$$\Rightarrow a = \sqrt[3]{64x^{12}y^3}$$

$$= (64x^{12}y^3)^{\frac{1}{3}}$$

$$= 4x^4y$$

$$ii) \left(\frac{1}{2}\right)^{-5} = \left(\frac{2}{1}\right)^5$$

$$= \frac{32}{1}$$

$$= 32$$

$$7)i) \left(\frac{1}{4}\right)^0 = 1$$

$$7)ii) 16^{-3/2} = \frac{1}{16^{3/2}}$$

$$= \frac{1}{(\sqrt[2]{16})^3}$$

$$= \frac{1}{4^3} = \frac{1}{64}$$

$$8)i) \left(\frac{1}{25}\right)^{-\frac{1}{2}} = \left(\frac{25}{1}\right)^{\frac{1}{2}}$$

$$= \sqrt{\frac{25}{1}} = \frac{5}{1}$$

$$= 5$$

$$8)ii) \frac{(2x^2y^3z)^5}{4y^2z}$$

$$= \frac{32x^{10}y^{15}z^5}{4y^2z}$$

$$= 8x^{10}y^{13}z^4$$

$$\begin{aligned}
 9) \text{ i)} \quad & 125\sqrt{5} \\
 & = 5^3 \times \sqrt{5} \\
 & = 5^3 \times 5^{\frac{1}{2}} \\
 & = 5^{3+\frac{1}{2}} = 5^{7/2}
 \end{aligned}$$

$$\begin{aligned}
 \text{ii)} \quad & (4a^3b^5)^2 \\
 & = 16a^6b^{10}
 \end{aligned}$$

$$\begin{aligned}
 10) \text{ i)} \quad & 5^2 \times 5^{-2} \\
 & = 5^{2+(-2)} = 5^0 = 1
 \end{aligned}$$

$$\begin{aligned}
 \text{or} \quad & 5^2 \times 5^{-2} \\
 & = 5^2 \times \frac{1}{5^2} = 1
 \end{aligned}$$

$$\begin{aligned}
 10) \text{ ii)} \quad & 100^{3/2} \\
 & = (\sqrt[2]{100})^3 \\
 & = 10^3 \\
 & = 1000
 \end{aligned}$$
