

Answers :

$$(1) \frac{32a^2}{7b^5} \times \frac{49a^3b^3}{2} = 112a^{2+3}b^{3-5} = 112a^5b^{-2} = \frac{112a^5}{b^2}$$

$$(2) \frac{10}{\sqrt{5}} \times \frac{2}{\sqrt{5}} - \frac{\sqrt{12}}{\sqrt{3}} + \sqrt[3]{9} \times \sqrt[6]{9} = \frac{20}{5} - \frac{2\sqrt{3}}{\sqrt{3}} + 9^{\frac{1}{3}} \times 9^{\frac{1}{6}}$$
$$= 4 - 2 + 9^{\frac{1}{3} + \frac{1}{6}} = 2 + 9^{\frac{1}{2}} = 2 + \sqrt{9} = 5$$

$$(3) (a) 100^3 \times 10^2 \div 10^r = 1$$

$$(10^2)^3 \times 10^2 \div 10^r = 10^0$$

$$10^6 \times 10^2 \div 10^r = 10^0$$

$$10^{6+2-r} = 10^0$$

$$\therefore 6 + 2 - r = 0$$

$$r = 8$$

$$(b) 0.0001 \div 10^3 = \frac{1}{10^r}$$

$$10^{-4} \div 10^3 = 10^{-r}$$

$$10^{-4-3} = 10^{-r}$$

$$\therefore -4 - 3 = -r$$

$$r = 7$$

$$(4) (a) 1.6749 \times 10^{-27} - 1.6726 \times 10^{-27} = 0.0023 \times 10^{-27}$$
$$= 2.3 \times 10^{-3} \times 10^{-27}$$
$$= 2.3 \times 10^{-30} \text{ Kg}$$

$$(b) 1.6726 \times 10^{-27} \div 9.1094 \times 10^{-31} = 16.726 \times 10^{-1} \times 10^{-27} \div 9.1094 \times 10^{-31}$$
$$= (16.726 \div 9.1094) \times 10^{-1-27-(-31)}$$
$$= 1.84 \times 10^3 \text{ (3 significant figures)}$$