

Ex - 12.1① Evaluate :-

$$(i) 3^{-2} = \frac{1}{3^2} = \frac{1}{3 \times 3} = \frac{1}{9} \quad [x^{-m} = \frac{1}{x^m}]$$

$$(ii) (-4)^{-2} = \frac{1}{(-4)^2} = \frac{1}{-4 \times -4} = \frac{1}{16} \quad [x^{-m} = \frac{1}{x^m}]$$

$$(iii) \left(\frac{1}{2}\right)^{-5} = \left(\frac{2}{1}\right)^5 = 2^5 = 32$$

② Simplify and Express the result in power notation with positive exponents.

$$(i) (-4)^5 \div (-4)^8 = (-4)^{5-8} = (-4)^{-3} = \frac{1}{-4^3} \quad [x^{-m} = \frac{1}{x^m}]$$

$$(ii) \left(\frac{1}{2^3}\right)^2 = \frac{(1)^2}{(2^3)^2} = \frac{1}{2^6} \quad [(x^m)^n = x^{m \cdot n}]$$

$$(iii) (-3)^4 \times \left(\frac{5}{3}\right)^4 = -3^4 \times \frac{5^4}{3^4} = \left(-3 \times \frac{5}{3}\right)^4 = (-5)^4 = (-1)^4 \times 5^4 = 1 \times 5^4 = 5^4$$

$$(iv) (3^{-7} \div 3^{-10}) \times 3^{-5} = 3^{-7+10} \times 3^{-5} = 3^3 \times 3^{-5} = 3^{3-5} = 3^{-2} = \frac{1}{3^2}$$

$$(v) 2^{-3} \times (-7)^{-3} = \frac{1}{2^3} \times \frac{1}{-7^3} \quad [x^{-m} = \frac{1}{x^m}]$$

$$= \frac{1}{\{2 \times (-7)\}^3} = \frac{1}{-14^3} \quad [(xy)^m = x^m \times y^m]$$

③ Find the value :-

$$(i) (3^0 + 4^{-1}) \times 2^2 = \left(1 + \frac{1}{4}\right) \times 4 = \frac{5}{4} \times 4 = 5$$

$$(ii) (2^{-1} \times 4^{-1}) = \left(\frac{1}{2} \times \frac{1}{4}\right) \div 2^{-2} \Rightarrow \frac{1}{8} \div \frac{1}{2^2} \\ \Rightarrow \frac{1}{8} \times \frac{4}{1} = \frac{1}{2} \text{ Ans}$$