Chapter - 12 (Exponents and Powers)

1) Find the value of (i) 2^{-3} (ii) $\frac{1}{3^{-2}}$

2) Simplify : (i) $(-4)^5 \times (-4)^{-10}$ (ii) $2^5 \div 2^{-6}$

3) Express 4^{-3} as a power with the base 2.

4) Simplify : (i) $(2^5 \div 2^8) \times 2^{-5}$ (ii) $(-4)^{-3} \times (5)^{-3} \times (-5)^{-3}$

(iii) $\frac{1}{8} \times (3)^{-3}$ (iv) $(3)^4 \times \left(\frac{5}{3}\right)^4$

5) Find m so that $(-3)^{m+1} \times (-3)^5 = (-3)^7$

6) Find the value of $\left(\frac{2}{3}\right)^{-2}$

7) Simplify (i) $\left\{\left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2}$ (ii) $\left(\frac{5}{8}\right)^{-7} \times \left(\frac{8}{5}\right)^{-5}$

8) Express the following in standard form :
(i) 0.000035 (ii) 4050000

9) Express the following in usual form.
(i) 3.52×10^5 (ii) 7.54×10^{-4} (iii) 3×10^{-5}

10) Evaluate $\left[\left(\frac{1}{2}\right)^{-1} - \left(\frac{1}{3}\right)^{-1}\right]^{-1}$

11) Find the value of $\sqrt[3]{27} + \sqrt[3]{1000} - \sqrt[3]{\frac{125}{64}}$

12) a) $\sqrt{45 \times 20}$ b) $\sqrt{0.09} \times \sqrt{0.49} + (1.2)^2$

13) Simplify using the laws of exponents : $\frac{3^{-5} \times 10^{-5} \times 125}{5^{-2} \times 6^{-5}}$

14) Find the value of $[3^0 + 2^2 + (-1)^0]^2$

15) a) Simplify using the laws of exponents $\frac{3^{-5} \times 10^{-5}}{6^{-5} \times 5^{-7}}$

b) Find x, if $3^{2x+2} = 9^{2x-1}$

16) Simplify using the laws of exponents

a) $\left\{\left(\frac{1}{3}\right)^{-2} - \left(\frac{1}{2}\right)^{-3}\right\} \div \left(\frac{1}{4}\right)^{-2}$

b) $\left(\frac{5}{8}\right)^{-7} \times \left(\frac{8}{5}\right)^{-5}$

17) Find the value of $(2^{-1} \times 4^{-1}) \div 2^{-2}$

18) Find x if $\left(\frac{2}{3}\right)^{-5} \times \left(\frac{2}{3}\right)^{12} = \left(\frac{2}{3}\right)^{3x-2}$

19) Simplify using the laws of exponents : $\frac{25 \times t^{-4}}{5^{-3} \times 10 \times t^{-8}}$ $(t \neq 0)$

20) Simplify : $\frac{5^{-3} \times 6^{-5} \times 81 \times 4}{3^{-7} \times 10^{-3}}$

21) The thickness of piece of paper is 0.000016 m. Express it in Standard form.