

# Exponents

1.  $(b) 3^6$

2.  $(a) -1$

3.  $(b) 1$

4.  $(b) 2^7$

5.  $(a) (-4)^{20}$

6.  $(b) 7$

7.  ~~$(a) 1$~~   $(c) 1$

8.  $(c) 7$

9.  $a^m \div a^n = a^{m-n}$

$(c) m-n$

10.  $(b) 16a^4$

11.  $(b) 3$

12.  $(b) 1$

13. (b) -1

14. (c) 2

15. (c) 8

16. (a)  $2^6$

17. (d) none of these

18.  $\left(-\frac{2}{3}\right) \times \left(-\frac{2}{3}\right) \times \left(-\frac{2}{3}\right) \times \left(-\frac{2}{3}\right) = \left(-\frac{2}{3}\right)^4$

19.  $(-3)^3 \times (-3)^4 = -2187$

20.  $2^5 = 32$

21.  $\left[\left(\frac{2}{3}\right)^2\right]^3$

$$= \left[\frac{2^2}{3^2}\right]^3 = \left[\frac{4}{9}\right]^3 = \frac{4^3}{9^3} = \frac{64}{729}$$

Very short type questions

22. a)  $2^0 \times 3^0 \times 7^0 = 1$

b)  $(7^0 \div 30) \times (8^0 - 5^0)$

$$= (1 \div 30) \times (1 - 1)$$

$$= \frac{1}{30} \times 0$$

$$= 0$$

$$c) 4^{\circ} \times 6^{\circ} + 100^{\circ}$$

$$= 1 \times 1 + 1$$

$$= 1 + 1$$

$$= 2$$

$$23a. \left(\frac{-7}{5}\right)^{11} \div \left(\frac{-7}{5}\right)^3 = \left(\frac{-7}{5}\right)^{2x+2}$$

$$= \left(\frac{-7^{11}}{5^{11}}\right) \div \left(\frac{-7^3}{5^3}\right) = \left(\frac{-7}{5}\right)^{2x+2}$$

$$23a. \left(\frac{-7}{5}\right)^{11} \div \left(\frac{-7}{5}\right)^3 = \left(\frac{-7}{5}\right)^{2x+2}$$

$$\Rightarrow \left(\frac{-7}{5}\right)^{11-3} = \left(\frac{-7}{5}\right)^{2x+2}$$

$$\Rightarrow \left(\frac{-7}{5}\right)^8 = \left(\frac{-7}{5}\right)^{2x+2}$$

$$\Rightarrow 8 = 2x + 2$$

$$\Rightarrow 2x + 2 = 8$$

$$\Rightarrow 2x = 8 - 2$$

$$\Rightarrow 2x = 6$$

$$\Rightarrow x = 3$$

$$b. \left[ \left( \frac{3}{13} \right)^8 \right]^3 = \left( \frac{3}{13} \right)^{a+1}$$

$$\Rightarrow \left( \frac{3}{13} \right)^{24} = \left( \frac{3}{13} \right)^{a+1}$$

$$\Rightarrow 24 = a+1$$

$$\Rightarrow a+1 = 24$$

$$\Rightarrow a = 24 - 1 = 23$$

$$c. 5^{\frac{2}{5}} = 5^x$$

$$\Rightarrow x = \frac{2}{5}$$

$$d. (2^6 \div 2^3) \times 2^{14} = 2^x$$

$$\Rightarrow (2^{6-3}) \times 2^{14} = 2^x$$

$$\Rightarrow 2^3 \times 2^{14} = 2^x$$

$$\Rightarrow 2^{14+3} = 2^x$$

$$\Rightarrow 2^{17} = 2^x$$

$$\Rightarrow x = 17$$

$$24. \text{b. } (7)^3 \div (2)^m = \left(\frac{7}{2}\right)^3$$

$$\Rightarrow \frac{7^3}{2^m} = \left(\frac{7}{2}\right)^3$$

$$\Rightarrow \left(\frac{7}{2}\right)^{3-m} = \left(\frac{7}{2}\right)^3$$

$$\Rightarrow 3-m=3$$

$$\Rightarrow -m=3-3$$

$$\Rightarrow -m=0$$

$$\Rightarrow m=0$$