



## STANDARD 8<sup>TH</sup>: CHAPTER 3

### Indices and cube root

#### Q1. Choose the correct alternative

- If  $(xy)^a = z$ ,  $(yz)^a = x$ , and  $(xz)^a = y$ , then what is the value of a? (None of x, y, and z is either 0 or 1.)

  - 2/5
  - 1/2
  - 3/4
  - 1
  
- Which is the greatest among the following?  
 $(\sqrt{3})^{30}$ ,  $(\sqrt{27})^4$ ,  $(\sqrt{81})^8$  and  $(\sqrt[3]{9})^{12}$

  - $(\sqrt{3})^{30}$
  - $(\sqrt{27})^4$
  - $(\sqrt{81})^8$
  - $(\sqrt[3]{9})^{12}$
  
- If  $2^n = 1024$ , then  $2^{\frac{n}{2}+2} = ?$

  - 256
  - 32
  - 225
  - 128
  
- $2^{2^3 \cdot 4^{0 \cdot 19}} = ?$

  - 1
  - 1024
  - 16
  - 64
  
- Which of the following is the ascending order of  
 $2^{1152}$ ,  $3^{768}$ , and  $5^{384}$ ?

  - $5^{384}$ ,  $3^{768}$ , and  $2^{1152}$
  - $5^{384}$ ,  $2^{1152}$ , and  $3^{768}$
  - $3^{789}$ ,  $5^{314}$ , and  $2^{1152}$
  - $2^{1152}$ ,  $3^{768}$ , and  $5^{384}$

6.  $(0.01024)^{\frac{1}{5}} = ?$   
 a) 0.4  
 b) 0.2  
 c)  $\sqrt{0.4}$   
 d)  $\sqrt[3]{0.4}$

7.  $\left(\frac{a}{b}\right)^{x+y+z} \div \left[ \left(\sqrt{\frac{a}{b}}\right)^{-x} \times \left(\sqrt{\frac{a}{b}}\right)^{-y} \times \left(\sqrt{\frac{a}{b}}\right)^{-z} \right]$

- a)  $\left(\frac{a}{b}\right)^{x+y+z}$   
 b) 1  
 c)  $\left(\frac{a}{b}\right)^{\frac{3(x+y+z)}{2}}$   
 d)  $\left(\frac{a^3}{b^3}\right)^{x+y+z}$

8. If  $5^{-5y} = \frac{1}{3125}$  and  $9^x = \frac{1}{81}$ , then  $x - y = \underline{\hspace{2cm}}$ .  
 a) -5  
 b) -2  
 c) -3  
 d) 2

9. If  $3^{x-1} = 3^{6-y} = 27$ , then  $x^2 + y^2$   
 a) 25  
 b) 16  
 c) 9  
 d) 62

10. If  $(x^2 - y^2)^4 = 256$  and  $(x^2 + y^2)^5 = 243$ , then find  $x^4 - y^4$ .  
 a) 24  
 b) 15  
 c) 16  
 d) 12

**Q2. Solve the following questions.**

1. If  $a + b + c = 0$ , then find the value of  $\sqrt{x^a \times x^b \times x^c}$ .

2. Simplify  $4^{a-1}b^{-2}c^3 \times 6a^3b^2c \div 12a^2c^4b$ .

3. Simplify  $\sqrt[5]{\frac{x^{10}}{32y^{25}}}$

4. A rectangle has area  $12 \text{ cm}^2$  and length  $2 + \sqrt{7}$  cm

5. If  $x = 3$  show that  $(4 - 2x^2)(x + x^3) = -8\sqrt{3}$

6. Varun secured  $x$  marks in Maths and Rahul secured  $x^2$  marks in Maths. The product of their marks was 729. Find their marks.

7. Solve:  $\left[ \sqrt{248 + \sqrt{52 + \sqrt{144}}} \right]^{\frac{1}{2}}$

8. Solve:  $\left[ 1 + \frac{1}{2^2-1} \right] \times \left[ 1 + \frac{1}{3^2-1} \right] \times \dots \times \left[ 1 + \frac{1}{99^2-1} \right]$

9. If  $\sqrt{a-x} + \sqrt{b-x} + \sqrt{c-x} = 0$  then prove that  $(a+b+c+3x)(a=b+c-x) = 4(ab+bc+ac)$

10.  $\frac{4^x}{2^{x+y}} = 8$  and  $\frac{9^{x+y}}{3^{5y}} = 243$  Find the value of  $x-y$