

# GOUR INSTITUTE

PSC, Bank (Clerk/PO), SSC, Railways, S.I., Classes

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F – 12, City Bazar, Thatipur, Gwalior (M.P.) [www.gourinstitute.in](http://www.gourinstitute.in)

## SURDS & INDICES

### INTRODUCTION

#### 1. Laws of Indices:

i.  $a^m \times a^n = a^{m+n}$

ii.

$$\frac{a^m}{a^n} = a^{m-n}$$

iii.  $(a^m)^n = a^{mn}$

iv.  $(ab)^n = a^n b^n$

v.

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

vi.  $a^0 = 1$

#### 2. Surds:

Let  $a$  be rational number and  $n$  be a positive integer such that  $a^{(1/n)} = a$

Then,  $a$  is called a surd of order  $n$ .

#### 3. Laws of Surds:

i.  $a = a^{(1/n)}$

ii.  $ab = a \times b$

iii.

$$\sqrt[n]{\frac{a}{b}} = \frac{a}{b}$$

iv.  $(a)^n = a$

v.  $\sqrt[m]{\sqrt[n]{a}} = \sqrt[mn]{a}$

vi.  $(a)^m = a^m$

## SURDS & INDICES

### EXERCISE-

- Value of  $(\sqrt{8})^{1/3}$  is -  
(a) 2 (b) 4 (c)  $\sqrt{2}$  (d)  $2\sqrt{2}$
- If  $a+b=3$ ,  $a-b=1$ , to find out  $a^2-b^2$  ?  
(a) 2 (b) 4 (c) 1 (d) 3
- $3^3 \times 2^3 = ?$   
(a) 125 (b) 216 (c) 154 (d) 54
- $(444)^0 \times (0)^{444} = ?$   
(a) 444 (b) 1 (c) 0 (d) none
- $(756)^0 \times (1) 756 \times (756)^1 \times (0)^{756} = ?$   
(a) 1 (b) 0 (c) 756 (d) none
- $5^{1/4} \times (125)^{0.25}$  is equal to :  
(a)  $\sqrt{5}$  (b)  $5\sqrt{5}$  (c) 5 (d) 25
- $(32/243)^{-2/5}$  is equal to:  
(a) 4/9 (b) 9/4 (c) 16/81 (d) 81/16
- $(1/216)^{-2/3} \div (1/27)^{-4/3}$  is equal :  
(a)  $3/4$  (b)  $2/3$  (c) 4/9 (d)  $1/8$
- $(\sqrt{(144)^2})^{-1/2} = ?$   
(a)  $\sqrt{-144}$  (b) -144 (c)  $1/\sqrt{144}$  (d)  $\sqrt{144}$
- $(4)^{-1/2} \times (4)^{1/2} \times (4)^0 = ?$   
(a) 1 (b) 0 (c) 4 (d) 2
- $(-1/343)^{-2/3} = ?$   
(a) -1/49 (b) 1/49 (c) -49 (d) 49
- $\sqrt{x} = 4/\sqrt{x}$  to  $x = ?$   
(a)  $x = 4$  (b)  $x = 5$  (c)  $x = 2$  (d)  $x = 3$
- $(28)^2 \div (28)^3 = ?$   
(a) 1/28 (b) 2/28 (c) 4/28 (d) 5/28
- $(40)^3 \times (30)^3 \times (20)^3 = ?$   
(a)  $(40000)^3$  (b)  $(32000)^3$  (c)  $(24000)^3$  (d) none
- $(2^4)^9 \div (2^3)^2 = ?$   
(a)  $(2)^{30}$  (b)  $(8)^{30}$  (c)  $(4)^{30}$  (d)  $(5)^{30}$
- $(81)^3 \div (9)^3 = ?$   
(a) 528111 (b) 428514 (c) 531441 (d) none
- $\sqrt{49} \div \sqrt{81} = ?$   
(a) 7/2 (b) 7/9 (c) 3/7 (d) none
- $(9)^{3/2} \div (243)^{-2/3}$  is equal?  
(a)  $(3)^{10/3}$  (b)  $(3)19/3$  (c)  $(3)^{1/3}$  (d)  $(3)19$
- $(27)^{-2/3}$  is equal?  
(a) 1/6 (b) 1/8 (c) 1/9 (d) 1/27

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## **ANSWER SHEET**

### **SURDS & INDICES EXERCISE**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>
C	D	B	C	B	C	B	C	C	A	D	A	A	A	A	E	B	B	C