# Surds and Indices questions for CGL Tier 2, CGL Tier 1 and SSC 10+2

## Surds and indices quiz 1

Directions: Study the following questions carefully and choose the right answer:

**1. The value of $(256)^{5/4}$ is:**

A. 512 B. 984

C. 1024 D. 1032

**2. The value of** $\frac{1}{(216)^{-\left(\frac{2}{3}\right)}} + \frac{1}{(256)^{-\left(\frac{3}{4}\right)}} + \frac{1}{(32)^{-\left(\frac{1}{5}\right)}}$ **is:**

A. 102 B. 105

C. 107 D. None of these



**3. $(2.4 \times 10^3) \div (8 \times 10^{-2})$ = ?**

A. 3 x 10–5 B. 3 x 104

C. 3 x 105 D. 30

**4.** $\left(\frac{1}{216}\right)^{-\left(\frac{2}{3}\right)} \div \left(\frac{1}{27}\right)^{-\left(\frac{4}{3}\right)} = ?$

A. 3/4 B. 2/3

C. 4/9 D. 1/8

**5. $(1000)^7 \div 10^{18}$ = ?**

A. 10 B. 100

C. 1000 D. 10000

**6.** $49 \times 49 \times 49 \times 49 = 7^{?}$

A. 4 B. 7

C. 8 D. 16

**7. The value of** $(8^{-25} - 8^{-26})$ **is:**

A. $7 \times 8^{-25}$ B. $7 \times 8^{-26}$

C. $8 \times 8^{-26}$ E. $8 \times 8^{-25}$

**8.** $(64)^{-1/2} - (32)^{-4/5} = ?$

A. 1/8 B. 3/8

C. 1/16 D. 3/16

**9.** $(18)^{3.5} \div (27)^{3.5} \times 6^{3.5} = 2^{?}$

A. 3.5 B. 4.5

C. 6 D. 7

**10.** $\frac{(243)^{0.13} \times (243)^{0.07}}{(7)^{0.25} \times (49)^{0.075} \times (343)^{0.2}}$ **is:**

A. 3/7 B. 7/3

C. 10/7 D. 16/7

**Correct answers:**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|
| C | A | B | C | C | C | B | C | D | A |

**Explanations:**

**1).** From the given equation:

$(256)^{5/4}$

$= (4^4)^{5/4}$

$= 4^{(4 \times 5/4)}$

$= 4^5$

$= 1024.$

Hence, option C is correct.



**2).** Given expression =

$$\frac{1}{(216)^{-2/3}} + \frac{1}{(256)^{-3/4}} + \frac{1}{(32)^{-1/5}}$$

$$= \frac{1}{6^{3\times(-2/3)}} + \frac{1}{4^{4\times(-3/4)}} + \frac{1}{2^{5\times(-1/5)}}$$

$$= \frac{1}{6^{-2}} + \frac{1}{4^{-3}} + \frac{1}{2^{-1}}$$

$= (6^2 + 4^3 + 2^1)$

$= (36 + 64 + 2)$

$= 102.$

Hence, option A is correct.

**3).** Given equation

$= (2.4 \times 10^3) \div (8 \times 10^{-2})$

then, $\frac{2.4 \times 10^3}{8 \times 10^{-2}}$

$= \frac{24 \times 10^2}{8 \times 10^{-2}}$

$= (3 \times 10^4)$

Hence, option B is correct.

**4).** Given equation:

$(\frac{1}{216})^{-2/3} \div (\frac{1}{27})^{-4/3} = ?$

$(216)^{(2/3)} \div (27)^{(4/3)}$

$= \frac{(216)^{2/3}}{(27)^{4/3}} = \frac{(6^3)^{\times(2/3)}}{(3^3)^{\times(4/3)}}.$

$= \frac{6^2}{3^4} = \frac{36}{81} = \frac{4}{9}$

Hence, option C is correct.

**5).** Given equation = $(1000)^7 \div 10^{18}$ .

$\Rightarrow \frac{(1000)^7}{(10)^{18}} \Rightarrow \frac{(10^3)^7}{(10)^{18}} \Rightarrow \frac{10^{(3 \times 7)}}{(10)^{18}}.$

$\Rightarrow \frac{10^{21}}{} = 10^{(21 - 18)} \Rightarrow 10^3 = 1000.$

$(10)^{18}$

Hence, option C is correct.

**6).** From the given equation:

$49 \times 49 \times 49 \times 49$

$\Rightarrow (7^2 \times 7^2 \times 7^2 \times 7^2)$

$\Rightarrow 7^{(2+2+2+2)}$

$\Rightarrow 7^8$

So, the correct answer is 8.

Hence, option C is correct.

**7).** From the given equation:

$8^{-25} - 8^{-26}$

$= (\frac{1}{8^{25}} - \frac{1}{8^{26}})$

$= \frac{(8-1)}{8^{26}}$

$= 7 \times 8^{-26}$

Hence, option B is correct.

**8).** From the given equation:

$(64)^{-1/2} - (32)^{-4/5}$

$\Rightarrow (8^2)^{-1/2} - \{(2)^5\}^{-4/5.}$

$\Rightarrow 8^{2 \times (-1/2)} - (2)^{5 \times (-4)/5}$

$\Rightarrow 8^{-1} - (2)^{-4}$

$\Rightarrow \frac{1}{8} - \frac{1}{(2)^4}$

$\Rightarrow (\frac{1}{8} - \frac{1}{16})$

$= \frac{1}{16}$

Hence, option C is correct.

**9).** In this question as we need to find the power of base 2 given in R.H.S, it's clear that factors other than 2 will be cancelled out on calculation in L.H.S.

Therefore, we can solve this question just by picking 2 is as bases with their powers in L.H.S.

$(18)^{3.5} \div (27)^{3.5} \times 6^{3.5} = 2^x$

$\downarrow \qquad\qquad\qquad\qquad \downarrow$

$(2 \times 9)^{3.5} \div (27)^{3.5} \times (2 \times 3)^{3.5} = 2^x$

$\downarrow$ Neglecting bases other than 2 $\downarrow$

$(2)^{3.5} \times (2)^{3.5} = 2^x$

$\Rightarrow 2^{3.5 + 3.5} = 2^x$

$\Rightarrow 2^7 = 2^x \Rightarrow x = 7.$

Hence, option D is correct.

**10).** From the given equation:

$$\frac{(243)^{0.13} \times (243)^{0.07}}{7^{0.25} \times (49)^{0.075} \times (343)^{0.2}}$$

$$= \frac{(243)^{(0.13+0.07)}}{7^{0.25} \times (7^2)^{0.075} \times (7^3)^{0.2}}$$

$$\frac{(243)^{0.2}}{7^{0.25} \times (7)^{(2\times0.075)} \times (7)^{(3\times0.2)}}$$

$$= \frac{(3^5)^{0.2}}{7^{0.25} \times 7^{0.15} \times 7^{0.6}}$$

$$= \frac{3^{(5\times0.2)}}{7^{(0.25+0.15+0.6)}}$$

$$= \frac{3^1}{7^1} = \frac{3}{7}$$

Hence, option A is correct.