



MISSION SELECTION

एसएससी CGL/CHSL/CPO SERIES



MATHS

# ***Surds & Indices*** ***(घातांक और करणी)*** ***Part-3***

7:30 PM



# **SURDS & INDICES**

## **करणी और घातांक**





# FORMULA

## महत्वपूर्ण सूत्र

### ***LAWS OF INDICES***

$$\Rightarrow a^m \times a^n = a^{m+n}$$

$$\Rightarrow a^m \div a^n = a^{m-n}$$

$$\Rightarrow (a^m)^n = (a^n)^m = a^{m \times n}$$

$$\Rightarrow a^0 = 1$$

$$\Rightarrow \text{If } a^n = a^m, \text{ then } n = m$$

$$\Rightarrow a^n = \frac{1}{a^{-n}} \quad \& \quad a^{-n} = \frac{1}{a^n}$$

$$\Rightarrow \left(\frac{a}{b}\right)^{-m} = \left(\frac{b}{a}\right)^m$$

$$\Rightarrow \text{If } a^x = b, \text{ then } a = b^{\frac{1}{x}}$$



# FORMULA

## महत्वपूर्ण सूत्र

### *LAWS OF SURDS*

$$\Rightarrow \sqrt[n]{a} = a^{\frac{1}{n}}$$

$$\Rightarrow (\sqrt[n]{a})^n = a$$

$$\Rightarrow (\sqrt[n]{a})^m = \sqrt[n]{a^m} = a^{\frac{m}{n}}$$

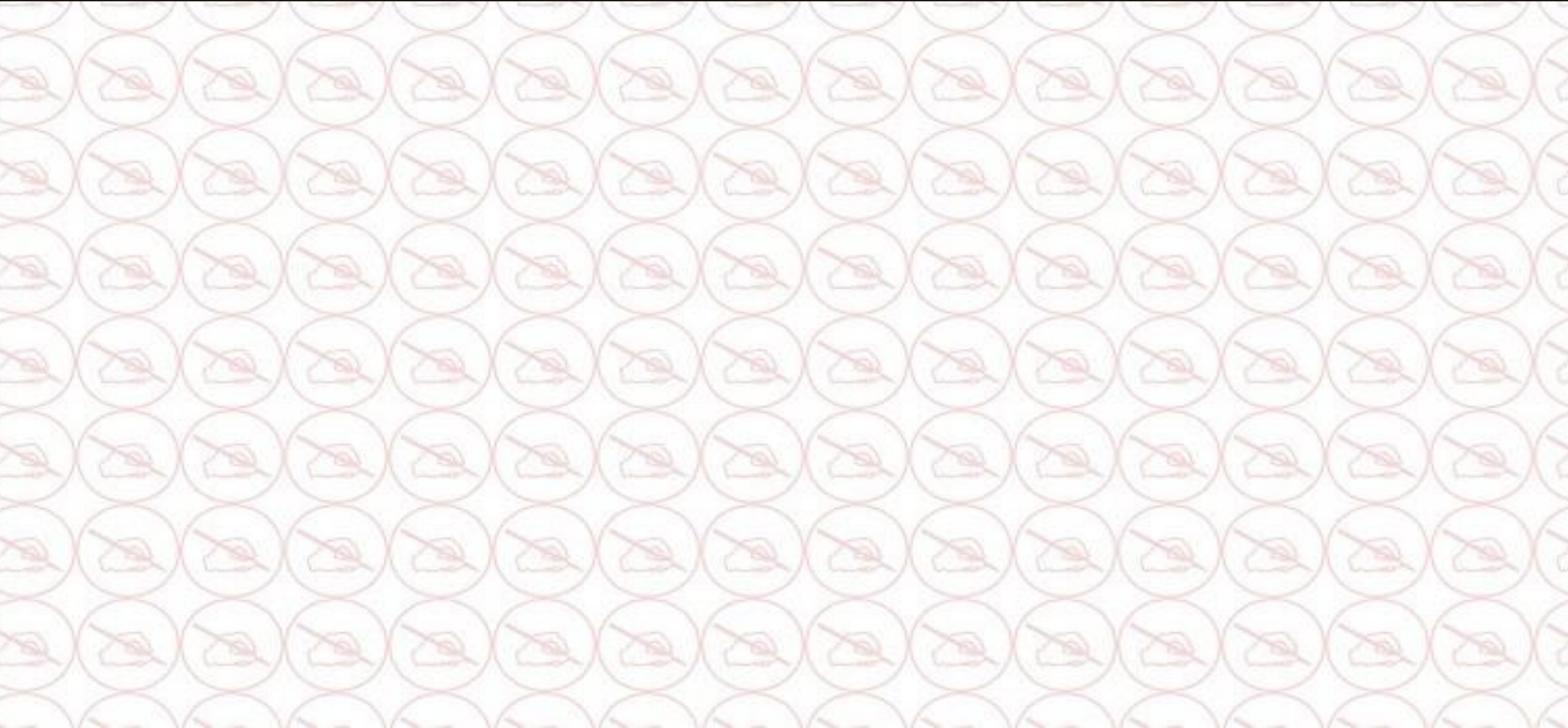
$$\Rightarrow \sqrt[n]{\sqrt[m]{a}} = \sqrt[m \times n]{a}$$

**Ex:** Find the square root of  $\frac{(3\frac{1}{4})^4 - (4\frac{1}{3})^4}{(3\frac{1}{4})^2 - (4\frac{1}{3})^2}$



**Ex:** write the given numbers in increasing order

$2^{500}$  ,  $3^{400}$  ,  $4^{300}$  ,  $5^{200}$





**Ex:** write the given numbers in increasing order

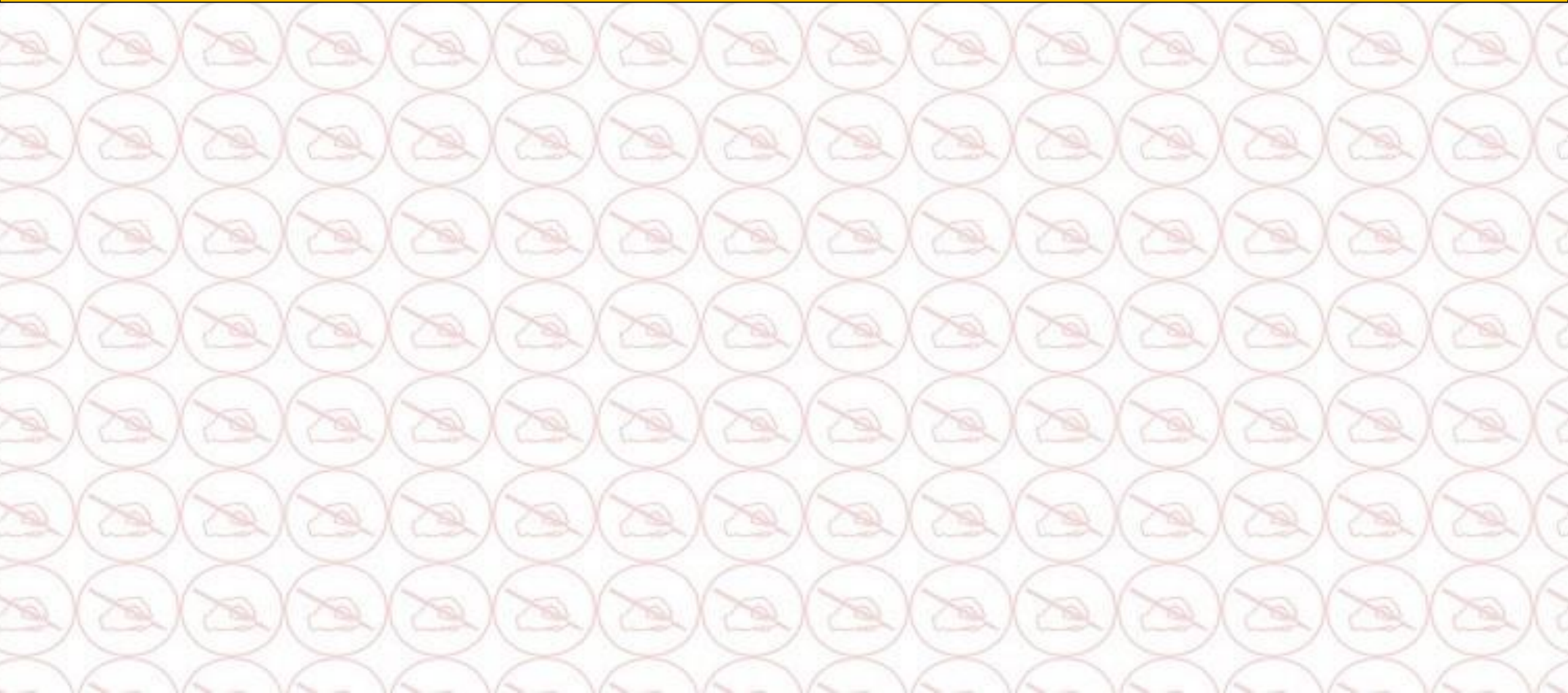
$$\sqrt[6]{13}, \sqrt[3]{4}, \sqrt[4]{5}, \sqrt[2]{3}$$



**Ex: Find the square root of  $6 - \sqrt{35}$**



**Ex :- Find the value of  $\sqrt{15 + 4\sqrt{14}}$**



**Ex: Find the value of  $\sqrt{28 - 6\sqrt{3}} + \sqrt{28 + 6\sqrt{3}}$  ?**





**Ex.** If  $X = 5 + 2\sqrt{6}$  then find the value of  $\sqrt{x} - \frac{1}{\sqrt{x}}$



**Ex:** find the sum of

$$\frac{1}{\sqrt{2}+1} + \frac{1}{\sqrt{3}+\sqrt{2}} + \frac{1}{\sqrt{4}+\sqrt{3}} + \frac{1}{\sqrt{5}+\sqrt{4}} + \dots + \frac{1}{\sqrt{100}+\sqrt{99}}$$



**Ex :-** If  $(3.7)^x = (0.037)^y = 10000$  then what is the value of  $\frac{1}{x} - \frac{1}{y}$

**Ex:** Find the largest among  $\frac{1}{\sqrt{99} - \sqrt{95}}, \frac{1}{\sqrt{78} - \sqrt{74}}, \frac{1}{\sqrt{86} - \sqrt{82}}, \frac{1}{\sqrt{107} - \sqrt{103}}$





**Ex:** If  $a = \sqrt{2} + 1$  ,  $b = \sqrt{2} - 1$  , then what is the value of  $\frac{1}{a+1} + \frac{1}{b+1}$

