

75. If  $\sqrt{5X - 6} + \sqrt{5X + 6} = 6$ , then  $x=?$

[A] ~~-4~~

[B] ~~0~~

[C]  $2 = x$

[D] 4

option से

Basic

$$2 + 4 = 6$$

76.

If

$$\frac{x + \sqrt{x^2 - 1}}{x - \sqrt{x^2 - 1}} + \frac{x - \sqrt{x^2 - 1}}{x + \sqrt{x^2 - 1}} = 194$$

then  $x = ?$

[A]  $7/2$

[B] 4

[C] 7

[D] 14

$$\frac{(x + \sqrt{x^2 - 1})^2 + (x - \sqrt{x^2 - 1})^2}{1} = 194$$

$$\cancel{2} \cdot (x^2 + x^2 - 1) = \cancel{194}^{97}$$

$$2x^2 = \frac{97}{2} \Rightarrow x = 7$$

77. If  $5^{x+1} - 5^{x-1} = 600$ , then what is the value of  $10^{2x}$ ?

यदि  $5^{x+1} - 5^{x-1} = 600$  है, तो  $10^{2x}$  का मान क्या है?

[A] 1

[B] 1000

[C] 100000

[D] 1000000

~~$$5^x \times 5^1 - \frac{5^x}{5^1} = 600$$~~

~~$$5^x \times 5 - \frac{5^x}{5} = 600$$~~

~~$$5^x = 5^3 \Rightarrow x = 3$$~~

78. If  $2^x + 3^y = 17$  &  $2^{x+2} - 3^{y+1} = 5$ , then-

यदि  $2^x + 3^y = 17$  &  $2^{x+2} - 3^{y+1} = 5$  है, तो-

~~[A]~~  $x=1, y=3$

[C]  $x=3, y=2$

$3^2 - 2^7 = 5$  [B]  $x=3, y=3$

[D]  $x=1, y=2$

79. If  $27^x + 27\left[x - \left(\frac{1}{3}\right)\right] = 972$ , then what is the value of  $x$ ?

यदि  $27^x + 27\left[x - \left(\frac{1}{3}\right)\right] = 972$  है तो  $x$  का मान क्या है?

[A] 2 ✓

[B] 3 ✗

[C] 4 ✗

[D] 5 ✗

$$729 + 243 = 972$$

$$27^2 = 729$$

$$27^3 > 972$$

$$\left(\frac{27}{3}\right)^5 = 3^5$$

80.  $9^{x-\frac{1}{2}} - 2^{2x-2} = 4^x - 3^{2x-3}$ , then  $x$  is

[A]  $\frac{3}{2}$  ✓

[C]  $\frac{3}{4}$  ✗

[B]  $\frac{2}{5}$  ✗

[D]  $\frac{4}{9}$  ✗

81. If  $9^x 3^y = 2187$  and  $2^{3x} 2^{2y} - 4^{xy} = 0$ , then  $x+y=?$

[A] 4

[B] 3

[C] 5 ✓

[D] 7 ✗

$$3^{2x+2y} = 3^7 \Rightarrow$$

$$4+3=7 \\ 2x+2y=7$$

$$2^{3x+2y} = 2^{2xy} \Rightarrow$$

$$3x+2y = 2xy$$

$$3 = \frac{3}{y} + \frac{2}{x} = 2$$

$$\begin{aligned} 3^5 &= 243 \\ 3^6 &= 729 \\ 3^7 &= 2187 \\ 81 = 3^4 = 3^8 &= 6561 \end{aligned}$$

82. If  $5^x - 3^y = 13438$  and  $5^{x-1} + 3^{y+1} = 9686$  then  $x + y$  equals

[A] 11

[C] 13

$$x=6 \text{ \& } y=7$$

[B] 12

[D] 14

$$5^x - 3^y = 13438$$
$$15625 - 2187 = 13438$$

$$5^5 + 3^8$$

.....5+.....

$$5^x > 13438$$

$$5^6 = 25^3 = 15625$$

$$3^7 = 2187$$

83. The value of  $\frac{\sqrt{0.6912} + \sqrt{0.5292}}{\sqrt{0.6912} - \sqrt{0.5292}}$  is:

$\frac{\sqrt{0.6912} + \sqrt{0.5292}}{\sqrt{0.6912} - \sqrt{0.5292}}$  का मान है-

[A] 1.5

[C] 15

*solve X*

[B] 0.9

[D] 9

$80^2 = 6400$   
 $85^2 = 7225$

$$\frac{83+73}{83-73} \approx \frac{156}{10} \approx 15$$

$70^2 = 4900$   
 $75^2 = 5625$

84. What is the value of  $\frac{\sqrt{29.16}}{\sqrt{1.1664}} + \frac{\sqrt{0.2916}}{\sqrt{116.64}} + \frac{\sqrt{0.0036}}{\sqrt{0.36}} = ?$

$\frac{\sqrt{29.16}}{\sqrt{1.1664}} + \frac{\sqrt{0.2916}}{\sqrt{116.64}} + \frac{\sqrt{0.0036}}{\sqrt{0.36}}$  का मान क्या है?

[A]  $26/5$

[B]  $27/5$

[C]  $103/20$

[D]  $101/20$

$$\sqrt{\frac{291600}{14664}}_4$$

$$5 + \frac{1}{20} + \frac{1}{10} = 5 + \frac{3}{20}$$

85. Let  $0 < x < 1$ . Then the correct inequality is

यदि  $0 < x < 1$  तो सही सम्बन्ध कौन सा है

[A]  $x < \sqrt{x} < x^2$

[B]  $\sqrt{x} < x < x^2$

[C]  $x^2 < x < \sqrt{x}$

[D]  $\sqrt{x} < x^2 < x$

(CGLMAINS  
2/16)

$x > 1$

$\sqrt{16} < 16 < 16^2$

$0 < x < 1$

↓  
•16 माना

$\cdot 16^2 < \cdot 16 < \sqrt{\cdot 16}$

$\sqrt{\cdot 16} = \cdot 40$

86. If  $x^{y+z} = 1$ ,  $y^{x+z} = 1024$  and  $Z^{x+y} = 729$  ( $x$ ,  $y$  and  $Z$  are natural numbers), then what is the value of  $(Z+1)^{y+x+1}$ ?

यदि  $x^{y+z} = 1$ ,  $y^{x+z} = 1024$  तथा  $Z^{x+y} = 729$  ( $x$ ,  $y$  तथा  $Z$  प्राकृतिक संख्याएँ हैं), तो  $(Z+1)^{y+x+1}$  का मान क्या है?

[A] 6561

[B] 10000

[C] 4096

[D] 14641

$$= 10^4$$

$$x^{y+z} = 1 \Rightarrow x=1, y=2, z=9$$

$$y^{x+z} = 1024 \Rightarrow y^{1+z} = 10^4 \Rightarrow y=2$$

$$Z^{x+y} = 729 \Rightarrow Z^{1+y} = 729 \Rightarrow Z=9$$

MAINS Misc.

87. If  $4^{x_1} = 5, 5^{x_2} = 6, 6^{x_3} = 7, \dots, 127^{x_{124}} = 128$ , then find  $x_1 x_2 x_3 \dots x_{124}$ ?

यदि  $4^{x_1} = 5, 5^{x_2} = 6, 6^{x_3} = 7, \dots, 127^{x_{124}} = 128$  है, तो  $x_1 x_2 x_3 \dots x_{124}$  ज्ञात कीजिये?

[A] 2

[B]  $5/2$

[C] 3

[D]  $7/2$

$x_1$   
 $4^{x_1} = 5$

$x_1, x_2$   
 $4^{x_1 x_2} = 6$

$x_1, x_2, x_3$   
 $4^{x_1 x_2 x_3} = 7$

$x_1, x_2, x_3, \dots, x_{124}$   
 $4^{x_1 x_2 x_3 \dots x_{124}} = 128$

88. Evaluate  $\left(\frac{4}{(\sqrt{5}+1)(\sqrt[4]{5}+1)(\sqrt[8]{5}+1)(\sqrt[16]{5}+1)} + 1\right)^{48}$ ?

$\left(\frac{4(\sqrt[16]{5}-1)}{(\sqrt[3]{5}+1)(\sqrt[4]{5}+1)(\sqrt[8]{5}+1)(\sqrt[16]{5}+1)} + 1\right)^{48}$  का मूल्यांकन करें

[A] 25

[B] 125

[C] 5

[D] 625

$$(\sqrt[16]{5}+1) \cdot (\sqrt[16]{5}-1) = (\sqrt[16]{5})^2 - 1^2 = \sqrt[8]{5}-1$$

$$\begin{aligned} & (\sqrt[16]{5}-1+1)^{48} \\ &= \left(\frac{1}{5}\right)^{48} = 5^{-48} = 5^{-3} = \frac{1}{125} \end{aligned}$$

89. Simplify  $\frac{\sqrt{15}+\sqrt{35}+\sqrt{21}+5}{\sqrt{3}+2\sqrt{5}+\sqrt{7}}$ ?

$\frac{\sqrt{15}+\sqrt{35}+\sqrt{21}+5}{\sqrt{3}+2\sqrt{5}+\sqrt{7}}$  हल कीजिये?

[A]  $\frac{\sqrt{7}+\sqrt{3}}{2}$

[C]  $\frac{\sqrt{7}+\sqrt{3}}{3}$

H.W

[B]  $\frac{\sqrt{7}-\sqrt{3}}{2}$

[D]  $\frac{\sqrt{7}+\sqrt{3}}{4}$

90. If  $x = (4096)^{7+4\sqrt{3}}$ , then which of the following equals 64?  
 यदि  $x = (4096)^{7+4\sqrt{3}}$ , तो निम्न में से कौन 64 के बराबर है?

[A]  $\frac{x^7}{x^{2\sqrt{3}}}$

[B]  $\frac{x^7}{x^{4\sqrt{3}}}$

[C]  $\frac{x^{\frac{7}{2}}}{x^{2\sqrt{3}}}$

[D]  $\frac{x^{\frac{7}{4}}}{x^{\sqrt{3}}}$

$4096 = 16^3 = 64^2 = 2^{12}$

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

(AT देखो)

$x^{\frac{1}{7+4\sqrt{3}}} = 4096$

$x^{\frac{7-4\sqrt{3}}{2}} = 64$

$x^{\frac{7-2\sqrt{3}}{2}} = 64$

$\frac{x^{\frac{7}{2}}}{x^{\sqrt{3}}} \leftarrow$

92. What is  $\sqrt{1 + \frac{1}{1^2} + \frac{1}{2^2}} + \sqrt{1 + \frac{1}{2^2} + \frac{1}{3^2}} + \dots + \sqrt{1 + \frac{1}{2007^2} + \frac{1}{2008^2}}$  equal to?

[A]  $2008 - \frac{1}{2008}$

[B]  $2007 - \frac{1}{2007}$

[C]  $2007 - \frac{1}{2008}$

[D]  $2008 - \frac{1}{2009}$

2007 terms

$(1 + \frac{1}{2}) + (1 + \frac{1}{6}) + (1 + \frac{1}{12}) + \dots + \dots + \dots$  2007 terms  $\sqrt{1 + 1 + \frac{1}{4}} = \frac{3}{2}$

$= 2007 + (\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{2007 \times 2008})$   $\sqrt{1 + \frac{1}{4} + \frac{1}{9}} = \frac{7}{6}$

$= 2007 + \frac{1}{1} [1 - \frac{1}{2008}]$   
 $= 2008 - \frac{1}{2008}$

$\sqrt{1 + \frac{1}{9} + \frac{1}{16}} = \frac{13}{12}$   
 $\vdots$