



R R CAMPUS



[Ground Floor, Nath kuti, Musailahpur Haat, Patna - 06 | : 9135000083/93:: 8002169064 |
[For :- CSAT, SSC, IBPS (PO & Clerk), RLYS, & Others Competitive Exam]

$$\begin{aligned}
 01. & [0.9 + \{2.3 - 3.2 - (7.1 - 5.4 - 3.5)\}] \\
 & = [0.9 + \{-0.9 - (7.1 - 8.9)\}] \\
 & = [0.9 + \{-0.9 + 1.8\}] \\
 & = [0.9 + 0.9] \\
 & = 1.8 \quad \text{ans} \rightarrow \text{b.) } 1.8
 \end{aligned}$$

$$\begin{aligned}
 02. & 2.5 + \frac{1}{3.25 - 2.5} \\
 & \quad \quad \quad \frac{0.75 + 0.50}{0.75 + 0.50} \\
 & = 2.5 + \frac{1}{3.25 - \frac{265 \times 100}{100}} \\
 & \quad \quad \quad \frac{162.5 \times 10}{100} \\
 & = 2.5 + \frac{1}{3.25 - 2} \\
 & = \frac{2.5}{1} + \frac{100}{125} \\
 & = \frac{5}{2} + \frac{4}{5} = \frac{25+8}{10} = \frac{32}{10} = 3.2 \\
 & \quad \quad \quad \text{ans} \rightarrow \text{c.) } 3.30.
 \end{aligned}$$

$$\begin{aligned}
 03. & 1 + \{1 \div \{5 \div 4 - 1 \div (13 \div 3 - 1 \div 3)\}\} \\
 & = 1 + \{1 \div \{5/4 - 1 \div (13/3 - 1/3)\}\} \\
 & = [1 \div \{5/4 - 1 \div (13-1)/3\}] \\
 & = [1 \div \{5/4 - 1 \div 12/3\}]
 \end{aligned}$$

$$\begin{aligned}
 & = [1 \div \{5/4 - 1/4\}] \\
 & = [1 \div \{4/4\}] \\
 & = 1 \div 1 \\
 & = 1 \quad \text{ans} \rightarrow \text{a.) } 1
 \end{aligned}$$

$$\begin{aligned}
 04. & [\frac{1}{2} - \frac{1}{2} \{ \frac{3}{4} - \frac{1}{2} (\frac{7}{8} - \frac{3}{4}) \}] \\
 & = [\frac{1}{2} - \frac{1}{2} \{ \frac{3}{4} - \frac{1}{2} (\frac{7-6}{8}) \}] \\
 & = [\frac{1}{2} - \frac{1}{2} \{ \frac{3}{4} - \frac{1}{2} \times \frac{1}{8} \}] \\
 & = [\frac{1}{2} - \frac{1}{2} \{ \frac{3}{4} - \frac{1}{16} \}] \\
 & = [\frac{1}{2} - \frac{1}{2} \{ \frac{12-1}{16} \}] \\
 & = [\frac{1}{2} - \frac{1}{2} \times \frac{11}{16}] \\
 & = [\frac{1}{2} - \frac{11}{32}] \\
 & = [\frac{16-11}{32}] \\
 & = \frac{5}{32} \quad \text{ans} \rightarrow \text{c.) } \frac{5}{32}
 \end{aligned}$$

$$\begin{aligned}
 05. & 5\frac{1}{3} \div 1\frac{2}{9} \times \frac{1}{4} [10 + \frac{3}{1-\frac{1}{5}}] - [1 + 2 + \frac{4}{11}] \\
 & = \frac{16}{3} \div \frac{11}{9} \times \frac{1}{4} [10 + \frac{3}{5-1}] - [3 + \frac{4}{11}] \\
 & = \frac{16}{3} \times \frac{8}{11} \times \frac{1}{4} [10 + \frac{3 \times 5}{4}] - [\frac{33+4}{11}]
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{12}{11} \left[10 + \frac{15}{4} \right] - \frac{37}{11} \\
 &= \frac{12}{11} \left[\frac{40+15}{4} \right] - \frac{37}{11} \\
 &= \frac{12}{11} \times \frac{55}{4} - \frac{37}{11} \\
 &= 15 - \frac{37}{11} \\
 &= \frac{165-37}{11} = \frac{128}{11} \quad \text{ans a) } \frac{128}{11}
 \end{aligned}$$

$$\begin{aligned}
 06. \quad &\frac{1}{5} + \left(999 \frac{494}{495} \right) \times 99 \\
 &= \frac{1}{5} + \left[999 + \frac{494}{495} \right] \times 99 \\
 &= \frac{1}{5} + \left[1000 - 1 + \frac{494}{495} \right] \times 99 \\
 &= \frac{1}{5} + \left[1000 - \frac{495+494}{495} \right] \times 99 \\
 &= \frac{1}{5} + \left[1000 - \frac{1}{495} \right] \times 99 \\
 &= \frac{1}{5} + \left[\frac{495000-1}{495} \right] \times 99 \\
 &= \frac{1}{5} + \frac{494999}{495} \times 99 \\
 &= \frac{1}{5} + \frac{494999}{5} \\
 &= \frac{1 + 494999}{5} \\
 &= \frac{495000}{5} = 99000 \\
 &= 99000 \quad \text{ans b) } 99000
 \end{aligned}$$

$$\begin{aligned}
 07. \quad &\frac{2\frac{1}{3} - 1\frac{2}{11}}{3 + \frac{1}{3 + \frac{1}{3 + \frac{1}{3}}}} \\
 &= \frac{\frac{7}{3} - \frac{13}{11}}{3 + \frac{1}{3 + \frac{1}{3 + \frac{1}{3}}}} = \frac{\frac{7}{3} - \frac{13}{11}}{3 + \frac{1}{3 + \frac{1}{3 + \frac{1}{3}}}} \\
 &= \frac{77-39}{33} = \frac{38}{33} = \frac{38}{33} \\
 &= \frac{38}{33} \times \frac{33}{109} = \frac{38}{109} \\
 &\quad \text{ans a) } \frac{38}{109}
 \end{aligned}$$

$$\begin{aligned}
 08. \quad &\left(1 - \frac{1}{10^2} \right) \left(1 - \frac{1}{11^2} \right) \left(1 - \frac{1}{12^2} \right) \dots \\
 &\dots \left(1 - \frac{1}{50^2} \right) \\
 &= \left(\frac{10^2-1}{10^2} \right) \left(\frac{11^2-1}{11^2} \right) \left(\frac{12^2-1}{12^2} \right) \dots \\
 &\dots \left(\frac{50^2-1}{50^2} \right) \\
 &= \left\{ \frac{(10+1)(10-1)}{10^2} \right\} \times \left\{ \frac{(11+1)(11-1)}{11^2} \right\} \times \\
 &\quad \left\{ \frac{(12+1)(12-1)}{12^2} \right\} \dots \left\{ \frac{(50+1)(50-1)}{50^2} \right\}
 \end{aligned}$$



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$$= \left(\frac{9 \times 11}{10 \times 10} \right) \times \left(\frac{10 \times 12}{11 \times 11} \right) \times \left(\frac{11 \times 13}{12 \times 12} \right) \dots$$

$$\dots \dots \dots \left(\frac{49 \times 51}{50 \times 50} \right)$$

$$= \frac{9 \times 51}{10 \times 50} = \frac{459}{500}$$

ans -> a.) $\frac{459}{500}$

9. $\frac{1}{3 \times 7} + \frac{1}{7 \times 11} + \frac{1}{11 \times 15} + \dots + \frac{1}{299 \times 303}$

$$\frac{1}{n(n+4)} = \frac{1}{4} \left(\frac{1}{n} - \frac{1}{n+4} \right)$$

$$= \frac{1}{4} \left(\frac{1}{3} - \frac{1}{3+4} \right) \quad [\because \text{when } n=3]$$

$$= \frac{1}{4} \left(\frac{1}{3} - \frac{1}{7} \right) \quad \text{--- (i)}$$

when $n=7$

$$\frac{1}{4} \left(\frac{1}{7} - \frac{1}{7+4} \right) = \frac{1}{4} \left(\frac{1}{7} - \frac{1}{11} \right) \quad \text{--- (ii)}$$

when $n=11$

$$\frac{1}{4} \left(\frac{1}{11} - \frac{1}{11+4} \right) = \frac{1}{4} \left(\frac{1}{11} - \frac{1}{15} \right) \quad \text{--- (iii)}$$

when $n=299$

$$\frac{1}{4} \left(\frac{1}{299} - \frac{1}{299+4} \right)$$

$$= \frac{1}{4} \left(\frac{1}{299} - \frac{1}{303} \right) \quad \text{--- (iv)}$$

$$\text{Sum} = \frac{1}{4} \left[\left(\frac{1}{3} - \frac{1}{7} \right) + \left(\frac{1}{7} - \frac{1}{11} \right) + \left(\frac{1}{11} - \frac{1}{15} \right) + \dots + \left(\frac{1}{299} - \frac{1}{303} \right) \right]$$

$$\text{Sum} = \frac{1}{4} \left(\frac{1}{3} - \frac{1}{303} \right)$$

$$= \frac{1}{4} \left(\frac{101-1}{303} \right)$$

$$= \frac{100}{4 \times 303} = \frac{25}{303}$$

ans -> d.) $\frac{25}{303}$

10. $\sqrt[3]{\frac{0.2 \times 0.2 \times 0.2 + 0.02 \times 0.02 \times 0.02}{0.6 \times 0.6 \times 0.6 + 0.06 \times 0.06 \times 0.06}}$

Let $a = 0.2$ and $b = 0.6$

$$= \sqrt[3]{\frac{a^3 + \left(\frac{a}{10}\right)^3}{b^3 + \left(\frac{b}{10}\right)^3}}$$

$$= \sqrt[3]{\frac{a^3 \left(1 + \frac{1}{10^3}\right)}{b^3 \left(1 + \frac{1}{10^3}\right)}} = \sqrt[3]{\frac{a^3}{b^3}} = \frac{a}{b}$$

$$= \frac{a}{b} = \frac{0.2}{0.6} = \frac{1}{3} \quad \text{ans -> (c.) } \frac{1}{3}$$

11. $(0.55)^3 + (0.07)^3 + (0.27)^3$

$[0.055]^3 + [0.007]^3 + [0.027]^3$

Let $0.55 = a$, $0.07 = b$ and
 $0.27 = c$

$$= \frac{a^3 + b^3 + c^3}{\left(\frac{a}{10}\right)^3 + \left(\frac{b}{10}\right)^3 + \left(\frac{c}{10}\right)^3}$$

$$= \frac{a^3 + b^3 + c^3}{\frac{a^3}{10^3} + \frac{b^3}{10^3} + \frac{c^3}{10^3}} = \frac{a^3 + b^3 + c^3}{\frac{a^3 + b^3 + c^3}{10^3}}$$

$$= \frac{(a^3 + b^3 + c^3)}{1} \times \frac{10^3}{(a^3 + b^3 + c^3)}$$

$$= 10^3 = 1000.$$

ans -> a.) 1000.

12. $\frac{1}{0.004}$

$$= \frac{1 \times 1000}{0.004} = 250$$

ans -> d.) 250.

13. $0.2 \times 0.003 \times 0.004 \times 0.005$

$$= 0.00000012$$

ans -> a.) 0.00000012

14. $\frac{(0.\overline{11} + 0.\overline{22}) \times 3}{\sqrt[3]{0.037} \times 3} = ?$

Let $a = 0.\overline{11}$

$$99a = 99 \times \frac{11}{99} = 11$$

$$a = \frac{11}{99} = \frac{1}{9}$$

then, $b = 0.\overline{22}$

$$99b = 99 \times \frac{22}{99} = 22$$

$$b = \frac{22}{99} = \frac{2}{9}$$

and $c = 0.\overline{037}$

$$1000c = 37.\overline{037}$$

$$999c = 999 \times \frac{37}{999} = 37$$

$$c = \frac{37}{999} = \frac{1}{27}$$

then putting the value of $a, b,$ and $c.$

$$\frac{\left(\frac{1}{9} + \frac{2}{9}\right) \times 3}{\sqrt[3]{\frac{1}{27}} \times 3} = \frac{\left(\frac{1+2}{9}\right)}{\frac{1}{3}}$$

$$= \frac{3}{9} \times \frac{3}{1} = 1$$

ans -> b.) 1.

15. $0.34\overline{67} + 0.13\overline{33}$

$$\begin{array}{r} 0.34676767 \\ 0.13333333 \\ \hline 0.48010100 \\ = 0.48\overline{07} \end{array}$$

ans -> b.) 0.4807



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16. एक 680621 में कौन सी सबसे छोटी संख्या जोड़ी जाएगी योगफल पूर्ण वर्ग हो जाएगी।

$$\begin{array}{r|l} 8 & 680621 \\ \hline 8 & 64 \\ \hline 162 & \times 406 \\ & 324 \\ \hline 1645 & \times 8221 \\ & 8225 \\ \hline & -4 \end{array}$$

∴ 4 जोड़ने पर पूर्ण वर्ग हो जाएगी।

ans → a) 4.

17. वह सबसे छोटी संख्या जिसे 16800 से घटाने पर परिणाम एक पूर्ण वर्ग बन जाए,

$$\begin{array}{r|l} 1 & 16800 \\ \hline 1 & 1 \\ \hline 22 & \times 68 \\ & 44 \\ \hline 249 & 2400 \\ & 9 \\ \hline & 2241 \\ & \times 159 \end{array}$$

18. एक शिक्षक छात्रों को पंक्ति एवं कतार के समान संख्या में सजाना चाहता है। यदि कुल छात्र 3969 हों, तो प्रत्येक पंक्ति में कितने छात्र होंगे?

$$\begin{array}{r|l} 6 & 3969 \\ \hline 6 & 36 \\ \hline 123 & \times 369 \\ & 369 \\ \hline 126 & \times \times \times \end{array}$$

$$R \times C = 63 \times 63.$$

∴ ans → c) 63.

19. x वह सबसे छोटी पूर्ण संख्या है जिसे 105840 में गुणा किया जाए तो गुणनफल पूर्ण वर्ग बन जाता है। तो x के अंकों का योग ज्ञात करें।

$$\begin{array}{r|l} 2 & 105840 \\ \hline 2 & 52920 \\ \hline 2 & 26460 \\ \hline 2 & 13230 \\ \hline 3 & 6615 \\ \hline 3 & 2205 \\ \hline 3 & 735 \\ \hline 5 & 245 \\ \hline 7 & 49 \end{array}$$

$$\begin{array}{r} 7 \overline{) 49} \\ \underline{7 } \\ 1 \end{array}$$

$$2^2 \times 2^2 \times 3^2 \times 7^2 \times 3 \times 5$$

$$= 15$$

ans \rightarrow b.) 15.

20. एक पर्यटक प्रतिदिन उतना ही खर्च कर रहा है जितने की उसके यात्रा के दिनों की संख्या है। यदि उसकी कुल खर्च ₹ 961 है तो उसने कितने दिनों तक यात्रा किया ?

Solⁿ:-

$$\begin{array}{r|l|l} 3 & 961 & 31 \\ \hline 3 & 9 & \\ \hline 61 & \times 61 & \\ \hline 1 & 61 & \\ \hline 62 & \times & \end{array}$$

$$31 \times 31 = 961$$

ans \rightarrow d.) 31 days

21. 1008 में एक अंकों की किस संख्या से भाग दिया जाय की प्राप्त संख्या पूर्ण वर्ग है ?

$$\begin{aligned} \text{Sol}^n:- 1008 &= 2^2 \times 2^2 \times 3^2 \times 7 \\ &= 2 \times 2 \times 3 \\ &= (12)^2 = 144 \end{aligned}$$

$$\begin{array}{r} 2 \overline{) 1008} \\ \underline{2 } \\ 252 \\ \underline{2 } \\ 126 \\ \underline{3 } \\ 63 \\ \underline{3 } \\ 21 \\ \underline{7 } \\ 7 \\ \underline{7 } \\ 1 \end{array}$$

ans \rightarrow d.) 7.

$$\begin{aligned} \frac{1008}{7} &= 144 \\ &= (12)^2 = 144. \end{aligned}$$

22. $\sqrt{110\frac{1}{4}}$ is equal to:-

$$\begin{aligned} \text{Sol}^n \sqrt{\frac{441}{4}} &= \frac{21}{2} = 10.5 \\ \text{ans} &\rightarrow \text{d.) } 10.5 \end{aligned}$$

23.) Find the value of

$$\sqrt{4 + \sqrt{44 + \sqrt{10000}}}$$

$$\begin{aligned} \text{Sol}^n:- \sqrt{4 + \sqrt{44 + 100}} \\ &= \sqrt{4 + \sqrt{144}} \\ &= \sqrt{4 + 12} = \sqrt{16} = 4. \\ \text{ans} &\rightarrow \text{c.) } 4. \end{aligned}$$

24. Assume that $\sqrt{13} = 3.605$ (approximately), $\sqrt{130} = 11.40$ (approximately).

Find the value of $\sqrt{1.3} + \sqrt{1300} + \sqrt{0.013}$.

$$\sqrt{1.3} = \sqrt{\frac{13}{10}} = \sqrt{\frac{130}{100}} = \frac{\sqrt{130}}{10}$$



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$$\sqrt{1300} = \sqrt{13 \times 100} = \sqrt{13} \times 10 = 10\sqrt{13}$$

$$\sqrt{0.013} = \sqrt{\frac{13}{1000}} = \sqrt{\frac{130}{10000}} = \frac{\sqrt{130}}{100}$$

$$\frac{\sqrt{130}}{10} = \frac{11.4}{10} = 1.14$$

$$10\sqrt{13} = 10 \times 36.05 = 360.5$$

$$\frac{\sqrt{130}}{100} = \frac{11.4}{100} = 0.114$$

value putting.

$$\sqrt{13} + \sqrt{1300} + \sqrt{0.013}$$

$$= 1.14 + 360.5 + 0.114$$

$$= 37.304$$

ans) C) 37.304

25. If $\sqrt{(1111 \dots x \text{ times}) - (22 \dots y \text{ times})}$

= 99 ... 100 times, then

$$x - y = ?$$

Solⁿ: - $x = 2 \times 100 = 200$

$$y = 100$$

$$x - y = 200 - 100$$

$$= 100$$

ans) d) 100.