1) $(56 \times 488) \div (28 \times 244) \times 10$

$\Rightarrow \frac{56^2 \times 488^2}{28 \times 244} \times 10$

$\Rightarrow$ 40 (E)

2) $\frac{8 \times 64}{3 \times 81 \times 81}$

$\Rightarrow \frac{(2)^3 \times (2)^6}{(3)^1 \times (3)^4 \times (3)^4}$ $\{a^m \times a^n = a^{m+n}\}$

$\Rightarrow \frac{(2)^9}{(3)^9}$ or $\Rightarrow \left(\frac{2}{3}\right)^9$ (D)

4) $(7.5)^2$

$\Rightarrow \frac{7.5 \times 7.5}{10 \times 10} \Rightarrow \frac{75 \times 75}{100} \Rightarrow \frac{75 \times 3}{4}$

$\Rightarrow \frac{225}{4} \Rightarrow 56.25$ (A)

3) Given $\Rightarrow$ $5\frac{9}{14}$ / $5 + \frac{3}{3 + \frac{1}{5}}$

$\Rightarrow$ Solve by downwards $\Rightarrow$

$\frac{3}{1} + \frac{5}{3} = \frac{3+5}{3} = \frac{14}{3}$

$5 + \frac{3}{\frac{14}{3}} \Rightarrow 5 + \frac{3 \times 3}{14} \Rightarrow 5 + \frac{9}{14}$

$\Rightarrow \frac{79}{14}$

$\Rightarrow \frac{\frac{79}{14}}{\frac{79}{14}} \Rightarrow \frac{79}{14} \times \frac{14}{79}$

$\Rightarrow 1$ Ans

5) Given $\Rightarrow$ $4 - \cfrac{5}{1 + \cfrac{1}{3 + \cfrac{1}{2 + \frac{1}{4}}}}$

$\Rightarrow$ (Start solving from downwards)

$\Rightarrow 2 + \frac{1}{4} = \frac{9}{4}$

$\Rightarrow 3 + \frac{1}{\frac{9}{4}} \Rightarrow \frac{3}{1} + \frac{4}{9} \Rightarrow \frac{27+4}{9} = \frac{31}{9}$

$\Rightarrow 1 + \frac{1}{\frac{31}{9}} \Rightarrow \frac{1}{1} + \frac{9}{31} = \frac{31+9}{31} = \frac{40}{31}$

$\Rightarrow 4 - \frac{5}{\frac{40}{31}} \Rightarrow 4 - 5 \times \frac{31}{40} \Rightarrow \frac{4}{1} - \frac{155}{40}$

$\Rightarrow \frac{160 - 155}{40} = \frac{5}{40} \Rightarrow \frac{1}{8}$ (A).

6) Given $\Rightarrow$ $\frac{19}{43} + \cfrac{1}{2 + \cfrac{1}{3 + \cfrac{1}{1 + \frac{1}{4}}}}$

$\Rightarrow 1 + \frac{1}{4} = \frac{5}{4}$

$\Rightarrow 3 + \frac{1}{\frac{5}{4}} \Rightarrow \frac{3}{1} + \frac{4}{5} \Rightarrow \frac{15+4}{5} = \frac{19}{5}$

$\Rightarrow 2 + \frac{1}{\frac{19}{5}} \Rightarrow \frac{2}{1} + \frac{5}{19} = \frac{38+5}{19} = \frac{43}{19}$

$\Rightarrow \frac{19}{43} + \frac{1}{\frac{43}{19}} \Rightarrow \frac{19}{43} + \frac{19}{43}$

$\Rightarrow \frac{38}{43}$ (D)

7) $\left[\frac{(1.331)^{-1} + (1.331)^{-2} + \ldots + (1.331)^{-6}}{(1.331)^{-2} + (1.331)^{-3} + \ldots + (1.331)^{-7}}\right]^{1/3}$

$\Rightarrow \left[\frac{1.331}{(1.331)}\left(\frac{(1.331)^{-1+1} + (1.331)^{-1+2} + \ldots + (1.331)^{-1-6}}{(1.331)^{-1-1} + (1.331)^{-1-2} + \ldots + (1.331)^{-1-6}}\right)\right]^{1/3}$

$\Rightarrow (1.331)^{1/3}$

$\Rightarrow \sqrt{1.331}$

$= \sqrt{\frac{1331}{1000}}$

$\Rightarrow \sqrt{\frac{11\times11\times11}{10\times10\times10}}$

$\Rightarrow \frac{11}{10} \Rightarrow 1.1$ Ans

8) Given $\rightarrow x * y = x^2 + y^2 - xy$

$\therefore 4 * 12 \Rightarrow (4)^2 + (12)^2 - (4\times12)$

$\Rightarrow 16 + 144 - 48$

$\Rightarrow 160 - 48$

$\Rightarrow 112$

9) $\left[\frac{1}{3\cdot5} + \frac{1}{5\cdot7} + \frac{1}{7\cdot9} + \frac{1}{9\cdot11} + \frac{1}{11\cdot13}\right]$

$\Rightarrow$ multiply by 2 & divide by 2

$\Rightarrow \left[\frac{1}{3\cdot5} + \frac{1}{5\cdot7} + \frac{1}{7\cdot9} + \frac{1}{9\cdot11} + \frac{1}{11\cdot13}\right] \times \frac{2}{2}$

$\Rightarrow \left(\frac{1}{3} - \frac{1}{13}\right) \times \frac{1}{2}$

$= \left(\frac{13-3}{39}\right) \times \frac{1}{2} \Rightarrow \frac{10^{5}}{39} \times \frac{1}{2}$

$\Rightarrow \frac{5}{39}$ (D)

10) Given $\rightarrow$

$\left[\frac{1}{1\times2} + \frac{1}{2\times3} + \frac{1}{3\times4} + \ldots + \frac{1}{n(n+1)}\right]$

$\rightarrow$ For natural no. 'n' Always less than 1.

11) Smallest place 3 digit decimal no. is $\rightarrow$

$\rightarrow 0.001$ (D)

12) $2.\overline{136}$

$\Rightarrow 2 + \frac{136-1}{990}$

$\Rightarrow \frac{2}{1} + \frac{135}{990}$

$\Rightarrow \frac{1980+135}{990} \Rightarrow \frac{2115}{990}$ $\begin{matrix}47\\22\end{matrix}$

$\Rightarrow \frac{47}{22}$ (D).

(13) $0.\bar{6} + 0.\bar{7} + 0.\bar{8}$

$= \frac{6}{9} + \frac{7}{9} + \frac{8}{9} = \frac{21}{9} = \frac{7}{3} = 2\frac{1}{3}$ Ans

(14) $N = 0.369369369\ldots$ & $M = 0.531531\ldots$

$\therefore N = 0.\overline{369} = \frac{369}{999}$

& $M = 0.\overline{531} = \frac{531}{999}$

$\therefore N+M = \frac{369}{999} + \frac{531}{999} = \frac{900}{999}$

$= 0.\overline{900}$ Ans

(15) $5 - \cfrac{1}{1+\cfrac{1}{3+\frac{6}{13}}}$

$= 5 - \cfrac{1}{1+\frac{13}{45}}$

$= 5 - \frac{45}{58} = \frac{245}{58}$ Ans

(16) $\frac{x}{11} = \frac{1331}{x}$

$\Rightarrow x^2 = 11 \times 1331$

$= 11 \times 11 \times 11 \times 11$

$= 11^2 \times 11^2$

$\therefore x = 121$ Ans

(17) $(1312)^2 = 1721344$ Ans

(18) $\because 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{3} + \frac{1}{6} + \frac{3}{4} + \frac{1}{5} + \frac{4}{5}$

$= 1 + 1 + 1 + 1$

$= 4$ Ans

(19) 111×1111

$= 123321$ Ans

(20) माना $0.1 = x$ & $0.01 = y$

$\Rightarrow \frac{x^2+y^2}{(2x)^2+(2y)^2} = \frac{x^2+y^2}{4(x^2+y^2)}$

$= \frac{1}{4} = 0.25$ Ans

(21) $\frac{1}{0.08} \times 0.1$

$= \frac{100}{8} \times \frac{1}{10} = \frac{5}{4}$ Ans

(22) $0.004 \div 0.04 \times 0.080 \times (0.08 \div 0.0002)$

$= \frac{1}{10} \times \frac{80}{1000} \times 400$

$= \frac{16}{5} = 3.2$ Ans

(23) (3) $\frac{1}{3.576} = 0.2689$

(+1)

(4) $\frac{1}{0.3576} = ? \rightarrow 2.689$ Ans

(24) $10.1 \times 10.1 = 102.01$

then $101 \times 101 = 10201$ Ans

(25) 99×1111

$= (100-1) \times 1111$

$= 111100 - 1111$

$= 109989$ Ans