TEST-01

1) No. of No. divisible by 3 or 4 till 1000.

→ No. divisible by 3 →

$a_n = a+(n-1)d$

$999 = 3+(n-1)3$

$999-3 = (n-1)3$

$\frac{\cancel{996}^{332}}{\cancel{3}} = (n-1)$

$n = 333$

→ No. divisible by 4

$a_n = a+(n-1)d$

$1000 = 4+(n-1)4$

$\frac{996}{4} = (n-1)$

$n = 249+1 \Rightarrow n = 250$

→ No. divisible by 12 →

$a_n = a+(n-1)d$

$996 = 12+(n-1)12$

$996-12 = (n-1)12$

$\frac{984}{12} = (n-1)$

$n = 83$

∴ No → 333+250-83

→ 500 (A)

2) From 51 to 150, No. of even & odd No. →

→ Total No → ~~gst + last~~

last - gst + 1

→ 150 - 51 + 1

→ 100

→ For odd No →

gst term → 51, last term → 149

2nd term → 53, d = 2

→ $\frac{\text{Last term - gst term}}{\text{common diff.}} + 1$

⇒ $\frac{149-51}{2}+1$ ⇒ $\frac{98}{2}+1$

⇒ 50.

∴ Even No → Total - odd No.

→ 100 - 50

∴ Even no. → 50.

⇒ (50, 50) D.

3) digits containing 500 pages →

⇒ (9)×1 + (90)×2 + (401)×3

→ 9+180+1203

→ 1392 (C)

4) $1+2+3+\ldots\ldots+21+20+19+\ldots\ldots+2+1$

⇒ for digits → $1+2+3+\ldots\ldots+21$

⇒ $\frac{n(n+1)}{2}$ ⇒ $\frac{21\times 22}{2}$ ¹¹

⇒ 231

⇒ for digits → $1+2+3+\ldots\ldots+20$

⇒ $\frac{n(n+1)}{2}$ ⇒ $\frac{{}^{10}20\times 21}{2}$

→ 210

∴ ⇒ 231 + 210 ⇒ 441 (D)

5) $a=3$, $d=3$, $a_n = 999$

⇒ $a_n = a+(n-1)d$

$999 = 3+(n-1)3$

$\frac{996}{3} = (n-1)$

$332+1 \Rightarrow n$

$n = 333$

∴ $S_n = \frac{n}{2}[2a+(n-1)d]$

$= \frac{333}{2}[2\times 3+(333-1)3]$

⇒ $\frac{333}{2}[6+(332)3]$

$= \frac{333}{2}[6+996]$

$= \frac{333}{2}\times{}^{501}\cancel{1002}$

⇒ 166833 (C)

6) By option → (1) → 3

⇒ $\sqrt{65536}$

⇒ 256

∴ (A) → 3

7) perfect square → (289) to (1296)

⇒ $\sqrt{289} = 17$, $\sqrt{1296} \rightarrow 36$

∴ $36-17+1 \Rightarrow 36-16$

⇒ 20 (B)

8) perfect square → (256) to (1600)

⇒ $\sqrt{256} = 16$, $\sqrt{1600} = 40$

⇒ $40-16+1 \Rightarrow 40-15$

9) By option → A = 30

∴ No of persons = No of rupees + No of paise

⇒ ₹30 + 30 paise

⇒ ₹ 30·3

∴ Total Amount in ₹ = 909

⇒ $\frac{{}^{3}\cancel{909}}{\cancel{30\cdot 3}}\times 10$

⇒ 30 (Satisfies)

∴ 30 → (A)

10.) By option →

(D) → 998001

⇒ $\sqrt{998001}$ ⇒ 999

11.) Least Multiple of 50 which is perfect square

⇒ A → 100

⇒ $\sqrt{100}$ → 10 ∴ satisfies

∴ (A) → 100

12.) By option → (D) → 3

→ $\frac{900}{\cancel{2700}}$

⇒ $\sqrt{900}$ ⇒ 30

∴ (D) → 3

13.) By option →

(C) → 12***6

(14) $\because \sqrt{21} = 4.58$ then find $\sqrt{\frac{3}{7}} + \sqrt{\frac{7}{3}}$

$= \sqrt{\frac{3}{7} \times \frac{7}{7}} + \sqrt{\frac{7}{3} \times \frac{3}{3}}$

$= \frac{1}{7}\sqrt{21} + \frac{1}{3}\sqrt{21}$

$= \sqrt{21}\left(\frac{1}{7} + \frac{1}{3}\right)$

$= \sqrt{21} \times \frac{10}{21}$

$= 4.58 \times \frac{10}{21}$

$= 2.18$ Ans (a)

(15) $\sqrt{10} = 3.16$, Find value $\sqrt{0.9}$

$= \sqrt{\frac{0.9}{10}}$

$= \frac{3}{\sqrt{10}} = \frac{3}{3.16} = \frac{300}{316}$

$= 0.9493$ Ans (b)

(16) $\sqrt{14} = 3.74$ and $\sqrt{140} = 11.83$

then. $\sqrt{1.4} + \sqrt{1400} + \sqrt{0.014}$

$= 1.183 + 37.4 + 0.1183$

$= 38.7013$ Ans (a)

(17) $\sqrt{55 + \sqrt{70 + \sqrt{110 + \sqrt{115 + \sqrt{36}}}}}$

$= \sqrt{64}$

$= 8$ Ans (d)

(18) $30 + 3 + 0.3 + 003 + \ldots\ldots + \infty$

$= 33.333\ldots\infty$

$= 33.\overline{3}$

$= \frac{333 - 33}{9}$

$= \frac{300}{9}$

$= \frac{100}{3}$ Ans (a)

(19) $15.151515\ldots$

$= 15.\overline{15}$

$= \frac{1515 - 15}{99}$

$= \frac{1500}{99}$

$= \frac{500}{33}$ Ans (b)

(20) $\frac{1}{5.2169} = 0.1916$ then $\frac{1}{0.0052169}$

$\therefore \frac{1}{0.0052169} = 191.6$ Ans (a)

(21) $0.0008 \times 0.008 \times 0.02$

$= 0.0000000128$ Ans (c)

(22) $\dfrac{(0.05)^2 + (0.16)^2 + (0.23)^2}{(0.023)^2 + (0.005)^2 + (0.016)^2}$ → 4 → 6

$= 100$ Ans (c)

(23) $\left(1-\frac{1}{2^2}\right)\left(1-\frac{1}{3^2}\right)\left(1-\frac{1}{4^2}\right)\cdots\left(1-\frac{1}{30^2}\right)$

$= \left\{\left(1-\frac{1}{2}\right)\left(1+\frac{1}{2}\right)\right\}\left\{\left(1-\frac{1}{3}\right)\left(1+\frac{1}{3}\right)\right\}\left\{\left(1-\frac{1}{4}\right)\left(1+\frac{1}{4}\right)\right\}\cdots\left\{\left(1-\frac{1}{30}\right)\left(1+\frac{1}{30}\right)\right\}$

$= \frac{1}{2} \times \frac{3}{2} \times \frac{2}{3} \times \frac{4}{3} \times \frac{3}{4} \times \frac{5}{4} \times \cdots \times \frac{29}{30} \times \frac{31}{30}$

$= \frac{1}{2} \times \frac{31}{30}$

$= \frac{31}{60}$ (b) Ans

(24) $\frac{5}{143} + \frac{5}{99} + \frac{5}{63} + \frac{5}{35} + \frac{5}{15} + \frac{5}{3}$

$= \frac{5}{13\times11} + \frac{5}{11\times9} + \frac{5}{9\times7} + \frac{5}{7\times5} + \frac{5}{5\times3} + \frac{5}{3\times1}$

$= \frac{5}{2}\left(\frac{1}{1} - \frac{1}{13}\right)$

$= \frac{5}{2} \times \frac{12}{13}^{6}$

$= \frac{30}{13}$ (c) Ans

(25) $999\frac{998}{999} \times 999$

$\left(1000 - \frac{1}{999}\right) \times 999$

$= 999000 - 1$

$= 998999$ (A) Ans