1) $\frac{50}{100}(x-y) = \frac{30}{100}(x+y)$

$50x - 50y = 30x + 30y$

$20x = 80y$

$y = \frac{20}{80}x$ (B) 25%.

$y = \frac{1}{4} \times x$

$y = 0.25 \times x$

$y = 25\%$ of x

2) $X\%$ of $Y + Y\%$ of X =

$\frac{x}{100} \times y + \frac{y}{100} \times x = \frac{2}{100} \times xy$

$= 2\%$ of xy

(B) 2% of xy

3) $S = (1 + 0.8667)\, I$

$S = 1.8667\, I$

$I = 0.5357\, S$

$= (1 - 0.46429)\, S$

46.43%

4) $P_2 \rightarrow \frac{130}{100} P_1$

$C_2 \rightarrow ? \times C_1$ (B) 23·1·

$\therefore P_1 C_1 = P_2 C_2$

$P_1 C_1 = \frac{130}{100} P_1 \times C_2$

$C_2 = \frac{100}{130} C_1$

$C_2 = 0.7692\, C_1$

$= (1 - 0.2307)\, C_1$

decreased by 23.07·1·

5) $A_{i(cmp)} = 25000$

$r = 10·1·$ per annum

$t = 2$ years.

(i) Annually

$$A = 25000 \left(1 + \frac{10}{100}\right)^2$$

$A = 30250$

(A) 30250.

(ii) half yearly

halt yearly
interest ($\frac{1}{2} \times 10$)
twice
(2×6 months)
1 year

$$A = 20000\left(1 + \frac{5}{100}\right)^{2\times 2}$$

$$= 30387.65$$

(A) 30387.65

(iii) quaterly

$$A = 25000\left(1 + \frac{2.5}{100}\right)^{4\times 2}$$

(A) 30460.07

$$= 25000\left(1 + \frac{2.5}{100}\right)^{8}$$

$$= 30460.07$$

b)

$CP = 850.$

$SP = 0.85 \times MP$

(B) 1200.

$$\frac{SP - CP}{CP} \times 100 = 20$$

$$SP = 1.2\,CP$$

$$0.85 \times MP = 1.2 \times 850$$

$$MP = \frac{1.2 \times 850}{0.85}$$

$$= 1200.$$

7) efficiency x time = work.

Jenna's efficiency = $1/15$

Emma's " = $1/9$.

$$\left(\frac{1}{15} + \frac{1}{9}\right) \times x = 1$$

$$x = 5.625 \text{ days.}$$

(B) 5.625.

8). $\frac{11}{y}$

η of A $\rightarrow$ $1/20$

B $\rightarrow$ $1/30$

C $\rightarrow -1/40$

$$\left(\frac{1}{20} + \frac{1}{30} - \frac{1}{40}\right) \times t = 1$$

$$t = \frac{120}{7} \text{ hrs.}$$

9) 2, 6, 10, ... (A.P.)

$a = 2$

$d = 4$

$$S_{21} = \frac{21}{2}(2\times 2 + 20\times 4)$$

$$= \underline{882}$$

10) $\left(\frac{1}{3}\right) + \left(\frac{5}{9}\right) + \left(\frac{9}{27}\right) + \ldots\ldots + \infty$ terms.

(+4, +4; ×3, ×3)

↓ in A.Grp.

easiest way to solve.

this series decreases.

$\frac{1}{3} = 0.333$. $\frac{5}{9} = 0.555$ $\frac{9}{27} = 0.3333$

$\frac{13}{81} = 0.1604$ $\frac{17}{243} = 0.0699$

$\simeq 1.5$.

(or)

$A_1 = 1$

$G_1 = \frac{1}{3}$ $d = 4$.

$r = \frac{1}{3}$

$$\lim_{n\to\infty} S_n = \frac{A_1 G_1}{1-r} + \frac{d G_1 r}{(1-r)^2}$$

$$\frac{1}{2} + 1 = 1.5$$

1, 4, 5, 8, 9

11)

2	3	4	2

$2 \times 3 \times 4 \times 2 = 48.$

(A) 48.

without repetition

12)

3	2	1

$= 3! = 6.$

with repetition

3	3	3

$= 3^3 = 27.$

13)

$$\frac{7!}{2!} \cdot \frac{7!}{2!} \cdot \frac{7!}{2!} \cdot \frac{7!}{2!} \cdot \frac{7!}{2!} \cdot \frac{7!}{2!}$$

$$= {}^7C_5 \times 6!$$

$= 15120.$

(D) None of these.

14). highest power of 2 in 320!

2	320
2	160
2	80
2	40
2	20
2	10
2	5
2	2
	1

(B) 318.

15) $2^{222} \times 5^{555}$

$= [2^{222} \times 5^{222}] \times 5^{333}$

$= 10^{222} \times 5^{333}$

Ans: 222.

16) $454^{(999)\text{ odd}} =$ ____ 4

$4^1 = 4$

$4^2 = 16$

$4^3 = 64$

(C) 4.

17)

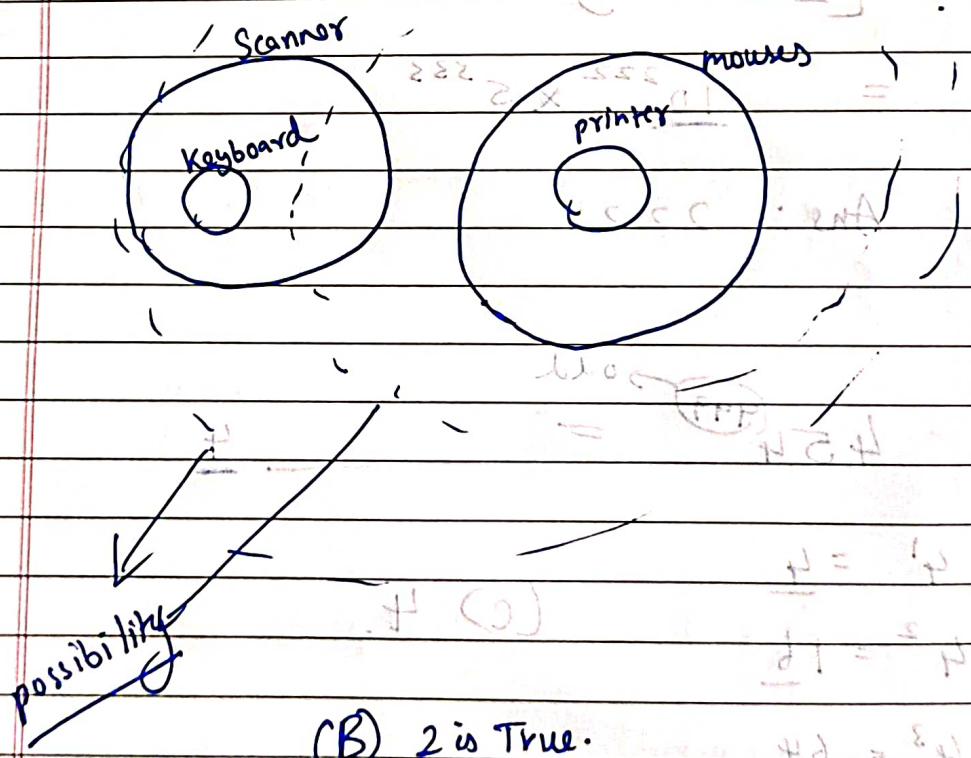
$\left(\frac{10000}{7}\right)$

$\left(\frac{\text{odd days}}{\text{(or) reminder}}\right) = 4$

Mon → 0
Tue → 1
Wednes → 2
Thurs → 3
Fri → 4

(D) Friday

18).



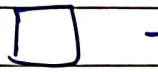
(B) 2 is True.

19). 10 sided polygon

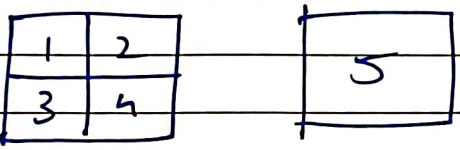
$$\left({}^{10}C_2 - 10\right) = 35$$

(${}^{10}C_2$: rootpoints; -10: sides; ${}^{10}C_2$: total lines)

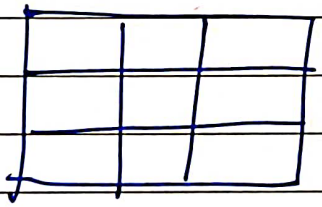
20)



$\rightarrow 1$



$$1^2 + 2^2 = 1 + 4 = 5$$



$$= 1^2 + 2^2 + 3^2 = 14$$

Chess board

$$1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2$$

$$\therefore = 204$$

(C) 204.