BANKING

Recurring : Jo Bar Bar ho rha hai

Terms: fixed amount → principal

no of month → n

Rate of Interest → R

maturity value : Amount recieved at end of maturity period

(i) ₹P per month (principal constant)

n month → R → Rate of Interest

R% p.a
↓
(per annum/year)

$= P \times [1 + 2 + \cdots + 3 \cdots n]$

F.P. $= P \times \left[\frac{n(n+1)}{2}\right]$ (∵ Sum of natural no's

$$I = E.P \times \frac{R}{100} \times T$$

$$\downarrow$$

$$SI = P \times \left(n\frac{(n+1)}{2}\right) \times \frac{R}{100} \times \frac{1}{12}$$

MV : $I + P \times n$

500 + 5000

= 5500

Ex:5 ⇒ Given,

$P = ₹340$

$n \longrightarrow ?$

$R = 6\%$

$m_v = 7157$

$SI = P \times \left(\frac{n(n+1)}{2}\right) \times \frac{1}{12} \times \frac{R}{100}$

$SI = \frac{170}{340}\left(\frac{n(n+1)}{2}\right) \times \frac{1}{12} \times \frac{6}{100} = \frac{17(n)(n+1)}{20}$

$$S_T = \frac{17(n)(n+1)}{20}$$

$$T_{nv} = Pn + I$$

$$7157 = \frac{340n}{120} \times \frac{20}{1} \quad \frac{17(n)(n+1)}{20}$$

$$7157 = \frac{6800n + 17(n)(n+1)}{20}$$

$$7157 \times 20 = 6800n + 17n^2 + 17n$$

$$17n^2 + 6817n - 143140 = 0$$

$$n^2 + 401n - 8420 = 0$$

$$\begin{array}{r|l} & 8426 \\ \hline 17 & 143140 \\ & -136 \\ \hline & 71 \\ & -68 \\ \hline & 34 \\ & -34 \\ \hline & 0 \end{array}$$

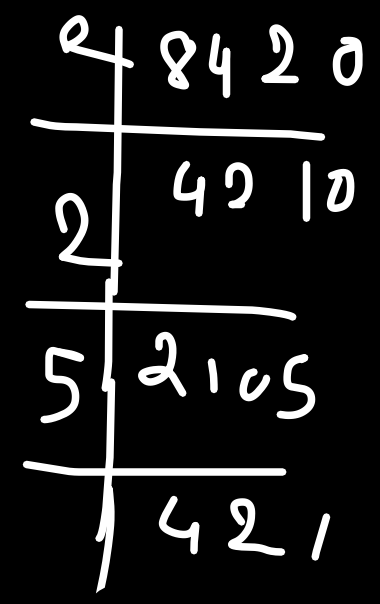
$$n^2 + 421n - 8420 = 0$$

$$n^2 + 421n - 20n - 8420 = 0$$

$$n(n+421) - 20(n+421) = 0$$

$$(n+421)(n-20) = 0$$

$$\therefore n = 20 \qquad n \neq -421$$



(1) Given, $P = ₹1000$

$n = 36$ month

$R = 8\%$.

$$SI = \frac{P(n)(n+1)}{2} \times \frac{1}{12} \times \frac{R}{100}$$

$$= 1000 \times \frac{\overset{3}{\cancel{36}} \times 37}{\cancel{2} \times \cancel{12}} \times \frac{\cancel{8}}{\cancel{100}}$$

$$= 37 \times 12 \times 10$$

$$SI = 4440$$

$$mv = pxp + I$$

$$= 1000 \times 36 + 4440$$

$$= 36000 + 4440$$

$$\boxed{mv = 40440}$$

(3) Given, $P = ₹600$

$$T = \frac{5}{2} \times 12 = 30 \text{ month}$$

$$R = 10\%.$$

$$I = \frac{P(n)(n+1)}{2} \times \frac{1}{12} \times \frac{R}{100}$$

$$= 600 \times \frac{15}{30} \times \frac{31}{2} \times \frac{1}{12} \times \frac{105}{100}$$

$$= 465 \times 5$$

$$I = ₹2325$$

$$mv = pn + I$$

$$= 36 \times 600 + 2325$$

$$= 21600 + 2325$$

$$\boxed{mv = ₹23925}$$

(iii) Given, $P = ₹600$

$$T = 2\frac{1}{2} = \frac{5}{2} \times 12 = 30 \text{ months}$$

$$R = 6\frac{2}{3} = \frac{20}{3}\%$$

$$SI = P \times \frac{(n)(n+1)}{2 \times 12} \times \frac{R}{100}$$

$$= ₹600 \times \frac{\cancel{30} \times 31}{\cancel{2} \times \cancel{12}_{6}} \times \frac{\cancel{20}^{10}}{\cancel{3} \times 100}$$

$$\boxed{SI = 1550}$$

$$mv = P \times n + I$$

$$= 600 \times 30 + 1550$$

$$= 18000 + 1550$$

$$\boxed{mv = ₹19550}$$

(4) (i) Given, $mv = 8325$

$n = 36$

$R = 7.5$

$$I = \frac{P(n)(n+1)}{2} \times \frac{1}{12} \times \frac{R}{100}$$

$$8325 = P \times \frac{36 \times 37}{2} \times \frac{1}{12} \times \frac{75}{10 \times 100}$$

$$8325 = P \times 111 \times \frac{75}{2 \times 1000}$$

$$\Rightarrow \frac{1}{P} = \frac{111 \times 75}{2000 \times 8325}$$

$$\frac{1}{111}$$

$$P = ₹2000$$

m_v : $P \times h + I$

$= 2000 \times 36 + 8325$

$= 72000 + 8325$

$m_v = 80325$