SOLUTIONS

1. (d)

$$SI = \frac{P \times R \times T}{100}$$

I II

$$A \times \frac{8 \times 2}{100} + B \times \frac{10 \times 2}{100} = 1680$$

$16A + (10000 - A)\,20 = 168000$

$\Rightarrow 4A = 200000 - 168000$

$$A = \frac{32000}{4} = Rs.8000$$

Alternate method:

SI for 1 year = Rs. 840

$$SI = \frac{10000 \times 8 \times 1}{100} = Rs.800$$

Difference in SI = 840 – 800 = Rs.40

This difference in SI is due to difference in rate of interest.

(10 – 8)% = Rs. 40

100% = Rs. 2000

Amount invested in scheme A = 10000 – 2000 = Rs.8000

2. (a)

SI = 96 – 80 = Rs.16

$$\therefore R = \frac{16 \times 100}{80 \times 2} = 10\%$$

Now,

Eff. Rate = (10% × 5) = 50%

$$\therefore \text{Amount} = \frac{150}{100} \times 62000$$

= Rs.93000

3. (a)

Let, sum borrowed be P.

ATQ,

$$P\left[\frac{5 \times 4}{100} + \frac{8 \times 6}{100} + \frac{12 \times 2}{100}\right] = 9016$$

$$P = \frac{901600}{20 + 48 + 24} = 9800$$

4. (c)

Amount on instalment = 4400 – 2000 = 2400

Interest = 2440 – 2400

= Rs.40 for 1 month

$$\therefore R = \frac{40}{2400} \times 100 \times 12$$

$$= \frac{5}{3} \times 12 = 20\%$$

5. (b)

P = 15,000 ,

I = 18600 + 6000 – 15000 = 9600

after 5 yrs amount remaining = 15000 – 6000 = 9,000

Let rate be R%

$$\Rightarrow \frac{15000 \times R \times 5}{100} + \frac{9000 \times R \times 5}{100} = 9600$$

$\Rightarrow (750 + 450)\,R = 9600$

$$\Rightarrow R = \frac{9600}{1200} = 8\%$$

6. (d)

$$SI = \frac{P \times R \times T}{100}$$

$$R\left[\frac{10,000 \times 2}{100} + \frac{5000 \times 4}{100}\right] = 2000$$

$R[200 + 200] = 2000$

R = 5%

7. (a)

$$\text{Installment} = \frac{A \times 100}{100t + \frac{Rt(t-1)}{2}}$$

$$= \frac{942900}{300 + 36.75\frac{(2)}{2}}$$

$$= \frac{942900}{336.75} = \frac{1257200}{449}$$

= Rs.2800

Alternate Method:

Amount = 100% + (100 + 12.5)% + (100 + 12.5 + 12.5)%

= 336.75%

336.75% = 9429

100% = Rs. 2800

8. (a)

Interest for 1 year = 8120 – 7656 = Rs.464

Interest for 4 years = 464 × 4 = 1856

∴ Principal = 7656 – 1856 = 5800

$$\therefore R = \frac{464 \times 100}{5800} = 8\%$$

9. (d)

2500 – 520 = 1980

Amount for installment =

$$1980 + 1980 \times 4 \times \frac{25}{1200}$$

= 1980 + 165 = 2145

$$\therefore \text{Installment} = \frac{214500}{400 + \frac{4}{2} \times \frac{25}{12} \times (3)}$$

$$= \frac{214500 \times 2}{825} = \frac{429000}{825} = Rs.520$$

10. (b)

Total SI = 20400 –12000 = Rs. 8400

SI for 1 year = 10% of 12000 = Rs. 1200

$$\text{Time} = \frac{8400}{1200} = 7 \text{ years}$$

11. (d)

$$\text{Rate difference} = 17\frac{1}{2}\% - 11\%$$

$$= 6\frac{1}{2}\%$$

$$\text{Principle, } 100\% = 1071.2 \times \frac{2}{13} \times 100$$

= Rs. 16480

12. (d)

$$\text{Rate difference} = 17\frac{1}{2}\% - 11\%$$

$$= 6\frac{1}{2}\%$$

$$\text{Principle, } 100\% = 1071.2 \times \frac{2}{13} \times 100$$

= Rs. 16480

Now,

$$SI = \frac{16480 \times 10 \times 5}{100} = Rs.\ 8240$$

13. (d)

$$\text{ATQ, } A \times 2 \times \frac{15}{100} = B \times \frac{4 \times 15}{100}$$

$$\Rightarrow \frac{A}{B} = \frac{2}{1}$$

3 unit = 27000

A, 2 unit = 18000
B, 1 unit = 9000
Total Interest,

$= 18000 \times \frac{2\times15}{100} + 9000 \times \frac{4\times15}{100}$

$= 5400 + 5400 = 10800$

14. (a)
Total SI of 7 years = 20400 – 12000
= 8400

SI of 1 year = $\frac{8400}{7} = 1200$

$1200 = \frac{12000\times1\times R}{100}$

R = 10%

15. (a)

ATQ, $\frac{A\times15\times2}{100} = \frac{B\times15\times4}{100}$

$\Rightarrow \frac{A}{B} = \frac{2}{1}$

3 unit = 36000
A= 2 unit = 24000

SI on A = $24000 \times \frac{15\times2}{100} = 7200$

16. (b)

Time = $3\frac{1}{2}$ year

Rate = y%
Had it been invested at (y + 4)% per annum at simple interest
It fetched Rs more = 4452 as interest

sum = $\frac{4452}{4\times\frac{7}{2}}\times100\%$

$= \frac{4452\times2\times100}{4\times7}$ = Rs. 31800

17. (d)
Total interest

$= \left(\frac{7x}{2}\right) + 2\left[\left(\frac{7}{2}\right)\times(x+2)\right]$% of 18600

$= \left[\left(\frac{7x}{2}\right) + (7x+14)\right]$% of 18600

$= \left(\frac{21x+28}{2}\right)$% of 18600

ATQ, (21x + 28) of 93 = 23110.5
$\Rightarrow 21x + 28 = 248.5$
$\Rightarrow x = 10.5$
Rate of second year = (x + 2)%
= 12.5%

18. (d)

Interest in 1 year = $\frac{7650}{3} = 2550$

$\Rightarrow \frac{10500\times x\times1}{100} + \frac{13500\times(x+2)\times1}{100}$
$= 2550$
$\Rightarrow 105x + 135x + 270 = 2550$
$\Rightarrow 240x = 2280$
$\Rightarrow x = 9.5\%$

19. (a)

Required Sum = $\frac{9200}{(5\times5)\%}\times100\%$

$= \frac{9200}{25\%}\times100\% =$ Rs. 36800

20. (a)

SI for $\frac{3}{2}$ years = 10224 – 8928
= 1296

SI for 2 years = $\frac{1296}{3}\times2\times2$
= 1728
Principal = 8928 – 1728 = 7200

R = $\frac{100\times1728}{7200\times2} = 12\%$

21. (b)
Time for the 1st sum be T years
Time for the 2nd sum be (T + 2) years
ATQ,
$\Rightarrow$ 8T% of P = 4(T + 2)% of P
$\Rightarrow 8T = 4T + 8$
$\Rightarrow T = 2$ years
Now,
Amount = 14500, R = 8%,
T = 2 years

Principal = $\frac{14500}{116\%}\times100\%$
= Rs. 12500

22. (b)

R =	10%	8%
T =	8	10
	80	80

Each sum = $\frac{36900}{(100+80)\%}\times100\%$
= Rs 20500

23. (b)
Let, sum = 40
Case-I

SI = $\frac{5\times5\times2}{100} = \frac{1}{2}$

Case-II

SI = $\frac{24\times6\times2}{100} = \frac{72}{25}$

Case-III

SI = $\frac{11\times10\times2}{100} = \frac{11}{5}$

Total SI = $\left(\frac{1}{2} + \frac{72}{25} + \frac{11}{5}\right) = \frac{279}{50}$
Total interest = Rs 1674 (given)

Invested sum = $1674 \times \frac{50}{279} \times 40$
= Rs.12000

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