Solution 10:

Exercise 2(B)

Solution 1:

For 1st year
P = Rs. 4000
R = 8
T = 1 year

$$I = \frac{4000 \times 8 \times 1}{100} = 320$$

A = 4000 + 320 = Rs. 4320
For 2nd year
P = Rs. 4320
R=8%
T = 1 year

$$I = \frac{4320 \times 8 \times 1}{100} = Rs.345.60$$

A = 4320 + 345.60 = 4665.60
Compound interest = Rs. 4665.60 - Rs. 4000
= Rs. 665.60

Simple interest for 2 years = $\frac{4000 \times 8 \times 2}{100}$

= Rs. 640
Difference of CI and SI = 665.60 - 640
= Rs 25.60

Solution 2:

For 1st year
P = Rs. 12500
R = 12%
R = 1 year

$$I = \frac{12500 \times 12 \times 1}{100} = Rs.1500$$

A = 12500 + 1500 = Rs. 14000
For 2nd year
P = Rs. 1400
R = 15%
T = 1 year

$$I = \frac{14000 \times 15 \times 1}{100} = Rs.2898$$

A = 1400 + 2100 = Rs. 16100
For 3rd year
P = Rs. 16100
R = 18%
T = 1 year

$$I = \frac{16100 \times 18 \times 1}{100} = Rs.2898$$

A = 16100 + 2898 = Rs. 3998
Difference between the compound interest of the third year and first year
= Rs. 2893 - Rs. 1500
= Rs. 1398

Solution 3:

Let money be Rs100
For 1st year
P=Rs100; R=8% and T= 1year

Interest for the first year= Rs $\frac{100 \times 8 \times 1}{100}$ = Rs8

Amount= Rs100+ Rs8= Rs108
For 2nd year
P=Rs108; R=8% and T= 1year

Interest for the second year= Rs $\frac{108 \times 8 \times 1}{100}$ = Rs8.64

Difference between the interests for the second and first year = Rs8.64 - Rs8 = Rs0.64
Given that interest for the second year exceeds the first year by Rs.96
When the difference between the interests is Rs0.64, principal is Rs100

When the difference between the interests is Rs96, principal=Rs $\frac{96 \times 100}{0.64}$ =Rs15,000

Solution 4:

Given that the amount for the first year = Rs. 5, 000

Rate per annum = 12%

Interest on Rs. 5, 000 = $\frac{12}{100}$ x Rs. 5, 000 = Rs. 600

So, amount at the end of the first 6 months

= Rs. 5, 000 + Rs. 600

= Rs. 5, 600

Amount left to be paid = Rs. 5, 600 – Rs. 1, 800

= Rs. 3, 800

Interest on Rs. 3, 800 = $\frac{12}{100}$ x Rs. 3, 800 = Rs. 456

So, amount at the end of the next 6 months

= Rs. 3, 800 + Rs. 456

= Rs. 4, 256

Amount left to be paid = Rs. 4, 256 – Rs. 1, 800

= Rs. 2, 456

Interest on Rs. 2, 456 = $\frac{12}{100}$ x Rs. 2, 456 = Rs. 294.72

So, amount at the end of the next 6 months

= Rs. 2, 456 + Rs. 294.72

= Rs. 2750.72

Hence, the third payment he has to make at the end of 18 months in order to clear the entire loan is Rs. 2750.72.

[*Note: The solution has been solved as per the question [that is rate per 6 months].

However, the answer at the back is solved with 'rate per annum'.

So, the answers do not match.]

Solution 5:

Given that the amount borrowed = Rs. 6, 000

Rate per annum = 5%

Interest on Rs. 6, 000 = $\frac{5}{100}$ x Rs. 6, 000 = Rs. 300

So, amount at the end of the first year

= Rs. 6, 000 + Rs. 300

= Rs. 6, 300

Amount left to be paid = Rs. 6, 300 - Rs. 1, 200

= Rs. 5, 100

Interest on Rs. 5, 100 = $\frac{5}{100}$ x Rs. 5, 100 = Rs. 255

So, amount at the end of the second year

= Rs. 5, 100 + Rs. 255

= Rs. 5, 355

Amount left to be paid = Rs. 5, 355 - Rs. 1, 200

= Rs. 4, 155

Hence, the amount of the loan outstanding at the beginning of the third year is Rs. 4, 155.

Solution 6:

Let principal (p = Rs. 100
R = 10%
T = 1 year

$$SI = \frac{100 \times 10 \times 1}{100} = Rs.10$$

Compound interest payable half yearly
R = 5% half yearly
$T = \frac{1}{2}$ year = 1 half year

For first $\frac{1}{2}$ year

$$I = \frac{100 \times 5 \times 1}{100} = Rs.5$$

A = 100 + 5 = Rs. 105

For second $\frac{1}{2}$ year

P = Rs. 105

$$I = \frac{105 \times 5 \times 1}{100} = Rs.5.25$$

Total compound interest = 5 + 5.25
= Rs. 10.25
Difference of CI and SI = 10.25- 10
= Rs. 0.25
When difference in interest is Rs. 10.25, sum = Rs. 100

If the difference is Rs. 1 ,sum = $\frac{100}{0.25}$

If the difference is Rs. = 180,sum = $\frac{100}{0.25} \times 180$

= Rs. 72000

Solution 7:

Let the original cost of the machine = Rs. 100
∴ Depreciation during the 1st year = 15% of Rs. 100 = Rs. 15
Value of the machine at the beginning of the 2nd year
= Rs. 100 – Rs. 15
= Rs. 85
∴ Depreciation during the 2nd year = 15% of Rs. 85 = Rs. 12.75
Now, when depreciation during 2nd year = Rs. 12.75, original cost = Rs. 100
⇒ when depreciation during 2nd year = Rs. 5,355

original cost = Rs. $\frac{100}{12.75} \times 5,355$ = Rs. 42,000

Hence, original cost of the machine is Rs. 42,000.

Solution 8:

(i) For 1st years
P = Rs. 5600
R = 14%
T = 1 year

$$I = \frac{5600 \times 14 \times 1}{100} = Rs.784$$

(ii) Amount at the end of the first year
= 5600 + 784
= Rs. 6384
(iii) For 2nd year
P = 6384
R = 14%
R = 1 year

$$I = \frac{6384 \times 14 \times 1}{100}$$

= Rs. 803.76
= Rs. 894 (nearly)

Solution 9(i):

The principal, P = Rs. 48,000

$$\text{Interest for the first year} = \frac{P \times R \times T}{100}$$

$$= \frac{48,000 \times 10 \times 1}{100}$$

$$= Rs.4,800$$

So, amount at the end of the first year
= Rs. 48, 000 + Rs. 4, 800
= Rs. 52, 800

$$\text{Interest for the second year} = \frac{P \times R \times T}{100}$$

$$= \frac{52,800 \times 10 \times 1}{100}$$

$$= Rs.5,280$$

So, amount at the end of the second year
= Rs. 52, 800 + Rs. 5, 280
= Rs. 58, 080

$$\text{Interest for the third year} = \frac{P \times R \times T}{100}$$

$$= \frac{58,080 \times 10 \times 1}{100}$$

$$= Rs.5,808$$

Hence, the difference between the interest for the second and third year is
Rs. 5, 808 – Rs. 5, 280 = Rs. 528.

Solution 9(ii):

Interest for the first year $= \frac{P \times R \times T}{100}$

$= \frac{50,000 \times 10 \times 1}{100}$

$= Rs.5,000$

Amount at the end of the first year

$= Rs.\ 50,000 + Rs.\ 5,000$

$= Rs.\ 55,000$

Interest for the second year $= \frac{P \times R \times T}{100}$

$= \frac{55,000 \times 12 \times 1}{100}$

$= Rs.6,600$

Amount at the end of the second year

$= Rs.\ 55,000 + Rs.\ 6,600$

$= Rs.\ 61,600$

Interest for the third year $= \frac{P \times R \times T}{100}$

$= \frac{61,600 \times 14 \times 1}{100}$

$= Rs.8,624$

Total of the interests earned during first and third years

$= Rs.\ 5,000 + Rs.\ 8,624$

$= Rs.\ 13,624$

Solution 10:

Savings at the end of every year = Rs. 3000

For 2nd year

P = Rs. 3000

R = 10%

T = 1 year

$I = \frac{3000 \times 10 \times 1}{100} = 300$

A = 3000 + 300 = Rs. 3300

For third year, savings = 3000

P = 3000 + 3300 = Rs. 6300

R = 10%

T = 1 year

$I = \frac{6300 \times 10 \times 1}{100} = Rs.630$

A = 6300 + 630 = Rs. 6930

Amount at the end of 3rd year

= 6930 + 3000

= Rs. 9930

Solution 11:

The amount borrowed = Rs. 10, 000

Interest for the first year $= \frac{P \times R \times T}{100}$

$= \frac{10,000 \times 5 \times 1}{100}$

= Rs. 500

So, amount at the end of the first year

= Rs. 10, 000 + Rs. 500

= Rs. 10, 500

The man pays 35% of Rs. 10, 500 at the end of the first year

$= \frac{35}{100} \times 10,500$ = Rs. 3, 675

So, amount left to be paid

= Rs. 10, 500 – Rs. 3, 675 = Rs. 6, 825

Interest for the second year $= \frac{P \times R \times T}{100}$

$= \frac{6,825 \times 5 \times 1}{100}$

= Rs. 341.25

So, amount at the end of the second year

= Rs. 6, 825 + Rs. 341.25

= Rs. 7, 166.25

The man pays 42% of Rs. 7166.25 at the end of the second year

$= \frac{42}{100} \times 7166.25$ = Rs. 3, 009.825

So, amount left to be paid

= Rs. 7, 166.25 – Rs. 3, 009.825 = Rs. 4, 156.425

Interest for the third year $= \frac{P \times R \times T}{100}$

$= \frac{4,156.425 \times 5 \times 1}{100}$

= Rs. 207.82125

So, amount at the end of the third year

= Rs. 4, 156.425 + Rs. 207.82125

= Rs. 4, 364.24625

Hence, he must pay Rs. 4, 364.24625 at the end of the third year in order to clear the debt.

Solution 12:

For 1st year

P= Rs8,000; R=10% and T= 1year

Interest= Rs $\frac{8000 \times 10 \times 1}{100}$ = Rs800

Amount= Rs8,000+ Rs800=Rs8,800

For 2nd year

P= Rs8,800+Rs8,000=Rs16,800; R=10% and T= 1year

Interest= Rs $\frac{16,800 \times 10 \times 1}{100}$ = Rs1,680

Amount= Rs16,800 + Rs1,680= Rs18,480

∴ Total saving at the beginning of 3rd year

=Rs18,480+ Rs8,000

=Rs26,480 Ans.