EXERCISE 9A

Question 1

Find the interest and the amount on:

(i) ₹ 750 in 3 years 4 months at 10% per annum.

Solution:-

Given P = ₹ 750

Time (T) $=3\ 4/12=3\ 1/3=10/3$ years
Rate (R)=10%

$$\text{Interest (I)} = \frac{PRT}{100} = \frac{750\times10\times\frac{10}{3}}{100} = \frac{250\times10\times10}{100} = 250$$

(ii) ₹ 5000 at 8% per year from 23rd December 2011 to 29th July 2012.

Solution:-

Principal (P) = ₹ 5000 Rate

(R) = 8% p.a

Time (T) = 23 December 2011 to 29 July 2012

Dec. Jan. Feb. March April May June July

8 31 29 31 30 31 30 29

Total 219 days $=219/365$ years

$$\text{Interest} = \frac{PRT}{100} = \frac{5000\times8\times219}{100\times365} = 10\times8\times3 = 240$$

∴Amount = P + I = ₹ 5000 + 240 = ₹ 5240

(iii) ₹ 2,600 in 2 years 3months at 1% per month.

Solution:-

Here p = ₹ 2600

Time (T) = 2 Years 3 month = 27 months

Rate (R) = 1 per month

$$\text{Interest} = \frac{P\times T\times R}{100} = \frac{2600\times27\times1}{100} = 26\times27 = \text{Rs.}702$$

∴ Amount = (2600+702) = Rs.3302

(iv) ₹ 4,000 in $=1\ 1/3$ years at 2 paise per rupee per month.

Solution:-

Here P=Rs.4.000, Time (T) =1 $=1/3$ year
= 1 year + $12/3$ months = 16 months
Rate (R) = 2 paise per rupee per month = 2% per month

$$\text{Interest } (I) = \frac{P \times T \times R}{100} = \frac{4{,}000 \times 2 \times 16}{100} = 40 \times 32 = \text{Rs.}1280$$

∴ Amount (A) =P+1=Rs.4000+Rs.1280 = Rs. 5280

Question 2

Rohit borrowed Rs. 24,000 at 7.5percent per year. How much money will he pay at the end of 4th years to clear his debt?

Solution:-

Principal (P) = Rs.24000

Rate (R) = 7.5% P.A.

Time (T) = 4 Years

$$S.I. = \frac{P \times T \times R}{100} = \text{Rs. } \frac{24{,}000 \times 4 \times 7.5}{100}$$

$= \text{Rs. } 240 \times 4 \times 7.5 = 240 \times 30 = \text{Rs.}7200$

Amount needed to clear the debt at the end of 4th year

= Rs.24000 + Rs.7200 = Rs.3,1200

Question 3.

The interest on a certain sum of money is Rs. 1,480 in 2 years and at 10 per cent per year. Find the sum of money.

Solution:-

Consider P = Rs. X

Time (T) = 2 Years

Rate (R) = 0%

$$\text{Interest } = \frac{P \times T \times R}{100} = \frac{x \times 10 \times 2}{100} = \frac{x}{5} = \frac{x}{5} = Rs.1480 \text{ (Given)}$$

$= \therefore x = 1480 \times 5 = \text{Rs.}7400$

Therefore, the money Rs.7400

Question 4.

On what principal will the simple interest be Rs. 7,008 in 6 years 3 months at 5% per year?

Solution:-

Consider principal = Rs.P

Time (T) = 6 Years 3 month $= 6\text{Year} + 3/12$

Year $= 75/12 = 25/4$ year $= 6\frac{1}{4}$ years

Rate(R)=5%

Simple interest =Rs.7,008

Here

$$\text{Simple interest} = \frac{P \times T \times R}{100} = 7{,}008 = \frac{P \times \frac{25}{4} \times 5}{100} \Rightarrow P = \frac{7008 \times 100 \times 4}{25 \times 5} = \frac{7008 \times 16}{5}$$

=112128/5=Rs.22425.60

Question 5.

Find the principal which will amount to Rs. 4,000 in 4 years at 6.25% per annum.

Solution:-

Consider Principal = Rs P, Time (T) = 4 Years

Rate =$6_{1/4}=25/4\%$

$$\text{Simple Interest} = \frac{P\times T\times R}{100} = \frac{P\times \frac{25}{4}\times 4}{100} = \frac{P}{4}$$

∴ Amount =$P+P/4=5P/4 =5P/4=4000$

⇒ 5P=4×4000

⇒ P=Rs.3200

Therefore, Principal = Rs.3200

Question 6.

(i) At what rate per cent per annum will Rs. 630 produce an interest of Rs. 126 in 4 years?

Solution:-

P=Rs.630, I=Rs.126,T=4

$$R = \frac{100\times I}{P\times T} = \frac{100\times 126}{630\times 4} = \frac{100}{20} = 5\%$$

(ii) At what rate per cent per year will a sum double itself in $=6_{1/4}$ years?

Solution:-

Let P = Rs.100

Amount = 2 × Rs.100 = Rs.100

Interest = A-P

= Rs.200 – Rs.100 = Rs.100

$=T=6_{1/4}$ years $=25/4$ years

$$R = \frac{100\times I}{P\times T} = \frac{100\times 100}{100\times \frac{25}{10}}\% = \frac{100\times 100}{100}\times \frac{4}{25} = 16\%$$

Question 7.

(i) In how many years will Rs. 950 produce Rs. 399 as simple interest at 7%?

Solution:-

P = Rs.950

S.I = Rs.3900

R = 7%

Here

$$T = \frac{100 \times I}{P \times R} = \frac{100 \times 399}{950 \times 7} = \frac{10 \times 21}{5 \times 7} = 2 \times 3 = 6 \text{ Years}$$

(ii) Find the time in which Rs. 1200 will amount to Rs. 1536 at 3.5% per year.

Solution:-

A = Rs.1536

P = Rs.1200

I = A – P

= Rs.1536 – Rs.1200 = Rs.336

Here

$$T = \frac{100 \times I}{P \times R}(Formula) = \frac{100 \times 336}{1200 \times 3.5} = \frac{100 \times 336 \times 10}{1200 \times 35} \left[\because \frac{1}{3.5} = \frac{10}{35}\right] = \frac{28 \times 10}{35} = 8$$

Question 8.

The simple interest on a certain sum of money is 3/8of the sum in 64 years. Find the rate percent charged.

Solution:-

Consider P = RS.8

S.I = Rs.3/8×8
= Rs.3

=T=61/4 years =25/4Years
Here

$$R = \frac{100 \times I}{P \times T} = \frac{100 \times 3}{8 \times \frac{25}{4}} = \frac{100 \times 3}{8} \times \frac{4}{25} = 2 \times 3 \text{ (Formula)}$$

=6%

Question 9.

What sum of money borrowed on 24th May will amount to Rs.10210.20 on 17th October of the same year at 5 percent per annum simple interest?

Solution:-

A = Rs.10210.20

R = 5% P.A

T = May + June+ July + August + Sept +Oct

= 7 + 30 + 31 + 31 + 30 + 17

=146/365days=2/5Year
Here

P + I = A

(Formula for finding principal)

$$P + \frac{P \times R \times T}{100} = A \Longrightarrow P\left(1 + \frac{5 \times \frac{2}{5}}{100}\right) = Rs.10210 \cdot 2 \Longrightarrow P\left(1 + \frac{R \times T}{100}\right) = A$$

$$P\left(1 + \frac{2}{100}\right) = Rs.10210 \cdot 20 \Longrightarrow P\left(\frac{102}{100}\right) = Rs.10210 \cdot 20 \Longrightarrow P = Rs.10210 \cdot 20 \times \frac{100}{102}$$

$$P = Rs.\ \frac{1021020}{102}$$

P=Rs.10010

∴ Money to be borrowed = Rs.10010

Question 10.

In what time will the interest on a certain sum of money at 6% be 5/8 of itself?

Solution:-

Consider P = Rs.8

Interest $= Rs \cdot 8\frac{5}{8} = Rs.5$ (Converting the mixed fraction into normal one)
R = 6%

$$T = \frac{100 \times 1}{P \times R} = \frac{100 \times 5}{8 \times 6} = \frac{500}{48} = \frac{125}{12} \text{ Years}$$

$=10=\frac{5}{12}$ Years
= 10 Years 5 months

$=[\because \frac{5}{12}$ year $= \frac{5}{12} \times 12$ months $= 5$ months]
Time =10 years 5 months