Question:1

Find the simple interest, when:

i Principal = Rs 2000, Rate of Interest = 5% per annum and Time = 5 years.

ii Principal = Rs 500, Rate of Interest = 12.5% per annum and Time = 4 years.

iii Principal = Rs 4500, Rate of Interest = 4% per annum and Time = months.

iv Principal = Rs 12000, Rate of Interest = 18% per annum and Time = 4 months.

v Principal = Rs 1000, Rate of Interest = 10% per annum and Time = 73 days.

Solution:

i Principal (P) = Rs 2000

Rate of interest (R) = 5% p.a.

Time (T) = 5 years

Simple interest = $\frac{P \times R \times T}{100} = \frac{2000 \times 5 \times 5}{100} = \text{Rs } 500$

ii Principal (P) = Rs 500

Rate of interest (R) = 12.5% p.a.

Time (T) = 4 years

Simple interest = $\frac{P \times R \times T}{100} = \frac{500 \times 12.5 \times 4}{100} = \text{Rs } 250$

iii Principal (P) = Rs 4500

Rate of interest (R) = 4% p.a.

Time (T) = 6 months

$T = \frac{6}{12} = \frac{1}{2}$ year $1year = 12months$

Simple interest = $\frac{P \times R \times T}{100} = \frac{4500 \times 4 \times \frac{1}{2}}{100} = \frac{4500 \times 4 \times 1}{100 \times 2} = \text{Rs } 90$

iv Principal (P) = Rs 12000

Rate of interest (R) = 18% p.a.

$\text{Time } (T) = 4 \text{ months } = \frac{4}{12} = \frac{1}{3} \text{ year} \qquad 1year = 12months$

Simple interest = $\frac{P \times R \times T}{100} = \frac{12000 \times 18 \times 1}{100 \times 3} = \text{Rs } 720$

v Principal (P) = Rs 1000

Rate of interest (R) = 10% p.a.

$\text{Time } (T) = 73 \text{ days } = \frac{73}{365} \text{ year } \quad 1year = 365days$

Simple interest = $\frac{P \times R \times T}{100} = \frac{1000 \times 10 \times 73}{100 \times 365} = \text{Rs } 20$

Question:2

Find the interest on Rs 500 for a period of 4 years at the rate of 8% per annum. Also, find the amount to be paid at the end of the period.

Solution:

Principal amount (*P*) = Rs 500

Time period (*T*) = 4 years

Rate of interest (*R*) = 8% p.a.

Interest = $\frac{P \times R \times T}{100} = \frac{500 \times 4 \times 8}{100} = \text{Rs } 160$

Total amount paid = Principal amount + Interest = Rs 500 + 160

= Rs 660

Question:3

A sum of Rs 400 is lent at the rate of 5% per annum. Find the interest at the end of 2 years.

Solution:

Principal amount (*P*) = Rs 400

Time period (*T*) = 2 years

Rate of interest (*R*) = 5% p.a.

Interest paid after 2 years$= \frac{P \times R \times T}{100} = \frac{400 \times 5 \times 2}{100} = \text{Rs } 40$

Question:4

A sum of Rs 400 is lent for 3 years at the rate of 6% per annum. Find the interest.

Solution:

Principal amount (*P*) = Rs 400

Time period (*T*) = 3 years

Rate of interest (*R*) = 6% p.a.

Interest after 3 years = $\frac{P \times R \times T}{100} = \frac{400 \times 6 \times 3}{100}$ = Rs 72

Question:5

A person deposits Rs 25000 in a firm who pays an interest at the rate of 20% per annum. Calculate the income he gets from it annually.

Solution:

Principal amount (*P*) = Rs 25000

Time period (*T*) = 1 year

Rate of interest (*R*) = 20% p.a.

Annual interest = $\frac{P \times R \times T}{100} = \frac{25000 \times 20 \times 1}{100}$ = Rs 5000

Question:6

A man borrowed Rs 8000 from a bank at 8% per annum. Find the amount he has to pay after $4\frac{1}{2}$ years.

Solution:

Principal amount (*P*) = Rs 8000

Time period (*T*) = $4\frac{1}{2} = \frac{9}{2}\ \text{years}$

Rate of interest (*R*) = 8% p.a.

Interest = $\frac{P \times R \times T}{100} = \frac{8000 \times 8 \times 9}{100 \times 2}$ = Rs 2880

Total amount paid after $4\frac{1}{2}$ years = Principal amount + Interest = Rs 8000 + Rs 2880

= Rs 10880

Question:7

Rakesh lent out Rs 8000 for 5 years at 15% per annum and borrowed Rs 6000 for 3 years at 12% per annum. How much did he gain or lose?

Solution:

Principal amount lent out by Rakesh (*P*) = Rs 8000

Time period (*T*) = 5 years

Rate of interest (*R*) = 15% p.a.

Interest = $\frac{P \times R \times T}{100} = \frac{8000 \times 15 \times 5}{100}$ = Rs 6000

Principal amount borrowed by Rakesh (*P*) = Rs 6000

Time period (*T*) = 3 years

Rate of interest (*R*) = 12% p.a.

Interest = $\frac{P \times R \times T}{100} = \frac{6000 \times 12 \times 3}{100}$ = Rs 2160

Amount gained by Rakesh = Rs 6000 – Rs 2160 = Rs 3840

Question:8

Anita deposits Rs 1000 in a savings bank account. The bank pays interest at the rate of 5% per annum. What amount can Anita get after one year?

Solution:

Principal amount (*P*) = Rs 1000

Time period (*T*) = 1 year

Rate of interest (*R*) = 5% p.a.

Interest = $\frac{P \times R \times T}{100} = \frac{1000 \times 5 \times 1}{100}$ = Rs 50

Total amount paid after 1 year = Principal amount + Interest = Rs 1000 + Rs 50
= Rs 1050

Question:9

Nalini borrowed Rs 550 from her friend at 8% per annum. She returned the amount after 6 months. How much did she pay?

Solution:

Principal amount (*P*) = Rs 550

Time period (*T*) = 6 months = $\frac{6}{12} = \frac{1}{2}$ year $\quad 1year = 12months$

Rate of interest (*R*) = 8% p.a.

Interest = $\frac{P \times R \times T}{100} = \frac{550 \times 8 \times 1}{100 \times 2} = \text{Rs } 22$

Total amount paid after 6 months = Principal amount + Interest = Rs 550 + Rs 22
= Rs 572

Question:10

Rohit borowed Rs 600000 from a bank at 9% per annum for 2 years. He lent this sum of money to Rohan at 10% per annum for 2 years. How much did Rohit earn from this transaction?

Solution:

Principal amount lent out by Rohit P = Rs. 60000

Time period T = 2 years

Rate of interest R = 10% p.a.

Interest = $\frac{P \times \mathrm{R} \times T}{100} = \text{Rs. } \frac{60000 \times 10 \times 2}{100} = \text{Rs. } 12000$

Principal amount borrowed by Rohit from the bank P = Rs. 60000

Time period T = 2 years

Rate of interest R = 9% p.a.

Interest = $\frac{P \times R \times T}{100} = \text{Rs. } \frac{60000 \times 9 \times 2}{100} = \text{Rs. } 10800$

Amount gained by Rohit = Rs. 12000 - 10800 = Rs. 1200

Question:11

Romesh borrowed Rs 2000 at 2% per annum and Rs 1000 at 5% per annum. He cleared his debt after 2 years by giving Rs 2800 and a watch. What is the cost of the watch?

Solution:

Principal amount borrowed by Romesh P = Rs. 2000

Time period T = 2 years

Rate of interest R = 2% p.a.

Interest = $\frac{\mathrm{P}\times\mathrm{R}\times\mathrm{T}}{100} = \mathrm{Rs.}\frac{2000\times2\times2}{100} = \mathrm{Rs.}80$

Principal amount borrowed by Romesh P = Rs. 1000

Time period T = 2 years

Rate of interest R = 5% p.a.

Interest = $\frac{\mathrm{P}\times\mathrm{R}\times\mathrm{T}}{100} = \mathrm{Rs.}\frac{1000\times5\times2}{100} = \mathrm{Rs.}100$

Total amount that he will have to return = Rs. 2000 + 1000 + 80 + 100 = Rs. 3180

Amount repaid = Rs. 2800

Value of the watch = Rs. 3180 - 2800 = Rs. 380

Question:12

Mr Garg lent Rs 15000 to his friend. He charged 15% per annum on Rs 12500 and 18% on the rest. How much interest does he earn in 3 years?

Solution:

Principal amount (*P*) = Rs 12500

Time period (*T*) = 3 years

Rate of interest (*R*) = 15% p.a.

Interest = $\frac{P\times R\times T}{100} = \frac{12500\times15\times3}{100}$ = Rs 5625

Rest of the amount lent = Rs 15000 – Rs 12500 = Rs 2500

Rate of interest = 18 % p.a.

Time period = 3 years

Interest = $\frac{P\times R\times T}{100} = \frac{2500\times18\times3}{100}$ = Rs 1350

Total interest earned = Rs 5625 + Rs 1350 = Rs 6975

Question:13

Shikha deposited Rs 2000 in a bank which pays 6% simple interest. She withdrew Rs 700 at the end of first year. What will be her balance after 3 years?

Solution:

Principal amount deposited (P) = Rs 2000

Time period (T) = 1 year

Rate of interest (R) = 6% p.a.

Interest after 1 year = $\frac{P \times R \times T}{100} = \frac{2000 \times 6 \times 1}{100} = \text{Rs } 120$

So amount after 1 year = Principal amount + Interest = 2000 + 120 = Rs 2120

After 1 year, amount withdrawn = Rs 700

Principal amount left (P_1) = Rs 2120 – Rs 700 = Rs 1420

Time period (T) = 2 years

Rate of interest (R) = 6% p.a.

Interest after 2 years = $\frac{P_1 \times R \times T}{100} = \frac{1420 \times 6 \times 2}{100} = \text{Rs } 170.40$

Total amount after 3 years = Rs 1420 + Rs 170.40 = Rs 1590.40

Question:14

Reema took a loan of Rs 8000 from a money lender, who charged interest at the rate of 18% per annum. After 2 years, Reema paid him Rs 10400 and wrist watch to clear the debt. What is the price of the watch?

Solution:

Principal amount (P) = Rs 8,000

Rate of interest (R) = 18%

Time period (T) = 2 years

Interest after 2 years = $\frac{P \times R \times T}{100} = \frac{8000 \times 18 \times 2}{100}$ = Rs 2,880

Total amount payable by Reema after 2 years = Rs 8,000 + Rs 2,880 = Rs 10,880

Amount paid = Rs 10,400

Value of the watch = Rs 10,880 – Rs 10,400 = Rs 480

Question:15

Mr Sharma deposited Rs 20000 as a fixed deposit in a bank at 10% per annual. If 30% is deducted as income tax on the interest earned, find his annual income.

Solution:

Amount deposit (P) = Rs 20,000

Rate of interest (R) = 10% p.a.

Time period (T) = 1 year

Interest after 1 year = $\frac{P \times R \times T}{100} = \frac{20000 \times 10 \times 1}{100}$ = Rs 2,000

Amount deducted as income tax = $30\% \text{ of } \text{Rs } 2,000 = \frac{30 \times 2000}{100} = \text{Rs } 600$

Annual interest after tax deduction = Rs 2,000 – Rs 600 = Rs 1,400

Question:16

If the simple interest on a certain sum for 2 years at the rate of 5% per annum is 4000, then the sum is

a 46,000
b 44,000
c 40,000
d 48,000

Solution:

We know, $I = \frac{P \times T \times R}{100}$

It is given that,
T = 2 years
R = 5%
I = 4000

Then,
$4000 = \frac{P \times 5 \times 2}{100} \Rightarrow 4000 = \frac{10P}{100} \Rightarrow P = 40000$

Thus, P = 40,000

Hence, the correct option is c.

Question:17

In how many years will a certain sum become 3 times itself at 25% per annum under simple interest?

a 5
b 8
c 12
d 6

Solution:

Amount = 3 times the sum = 3P

Simple interest (I) = Amount – Sum = 3P – P = 2P

Let the sum (P) be x.
Then, simple interest (I) = 2x
Rate (R) = 25%
Time = T

$I = \frac{P \times R \times T}{100} \Rightarrow T = \frac{100 \times I}{P \times R} \quad = \frac{100 \times 2x}{x \times 25} \quad = 4 \times 2 \quad = 8 \text{ years}$

Hence, the correct option is b.

Question:18

The amount on 25,000 at 8% per annum for 6 years under simple interest is

a 35,000
b 37,000
c 45,000
d 47,000

Solution:

It is given that,
Sum (P) = 25,000
Rate (R) = 8%
Time (T) = 6 years

$I = \frac{P \times R \times T}{100} \quad = \frac{25000 \times 8 \times 6}{100} \quad = 12000$

Therefore, simple interest (I) = 12,000

Now, Amount = P + I = 25,000 + 12,000 = 37,000

Hence, the correct option is b.

Question:19

The simple interest for 1500 at 8% per annum for 3 years is

a 400

b 360

c 450

d 500

Solution:

It is given that,

Sum (P) = 1500

Rate (R) = 8%

Time (T) = 3 years

$I = \frac{P \times R \times T}{100} = \frac{1500 \times 8 \times 3}{100} = 360$

Therefore, simple interest (I) = 360

Hence, the correct option is b.

Question:20

The difference between the interest obtained for 1000 at 12% per annum for 3 years and that for 1500 at 8% per annum for $1\frac{1}{2}$ years is

a 360

b 300

c 180

d 200

Solution:

It is given that,

Sum (P_1) = 1000

Rate (R_1) = 12%

Time (T_1) = 3 years

$I_1 = \frac{P_1 \times R_1 \times T_1}{100} = \frac{1000 \times 12 \times 3}{100} = 360 \quad \ldots . \left(1\right)$

Sum (P_2) = 1500

Rate (R_2) = 8%

Time (T_2) = $1\frac{1}{2}$ years = $\frac{3}{2}$ years

$I_2 = \frac{P_2 \times R_2 \times T_2}{100} = \frac{1500 \times 8 \times 3}{100 \times 2} = 180 \quad \ldots . \left(2\right)$

Subtracting 2 from 1, we get

$I_2 - I_1 = 360 - 180 = 180$

Hence, the correct option is c.

Question:21

Which of the following yields maximum interest for 2 years?

a 1500 at 8% per annum

b 1000 at 11% per annum

c 2000 at 5% per annum

d 900 at 20% per annum

Solution:

a It is given that,

Sum (P_1) = 1500

Rate (R_1) = 8%

Time (T_1) = 2 years

$$I_1 = \frac{P_1 \times R_1 \times T_1}{100} = \frac{1500 \times 8 \times 2}{100} = 240 \quad \ldots . \left(1\right)$$

b It is given that,

Sum (P_2) = 1000

Rate (R_2) = 11%

Time (T_2) = 2 years

$$I_2 = \frac{P_2 \times R_2 \times T_2}{100} = \frac{1000 \times 11 \times 2}{100} = 220 \quad \ldots . \left(2\right)$$

c It is given that,

Sum (P_3) = 2000

Rate (R_3) = 5%

Time (T_3) = 2 years

$$I_3 = \frac{P_3 \times R_3 \times T_3}{100} = \frac{2000 \times 5 \times 2}{100} = 200 \quad \ldots . \left(3\right)$$

d It is given that,

Sum (P_4) = 900

Rate (R_4) = 20%

Time (T_4) = 2 years

$I_4 = \frac{P_4 \times R_4 \times T_4}{100} = \frac{900 \times 20 \times 2}{100} = 360 \quad \ldots . \left(4\right)$

From 1, 2, 3 and 4,

900 at 20% per annum yields maximum interest for 2 years.

Hence, the correct option is d.

Question:22

If a sum of 3000 is lent out at 3% per annum for 20 years under simple interest, then the amount at the end of 20th year is

a 1800

b 1080

c 3600

d 4800

Solution:

It is given that,

Sum (P) = 3000

Rate (R) = 3%

Time (T) = 20 years

$I = \frac{P \times R \times T}{100} = \frac{3000 \times 3 \times 20}{100} = 1800$

Amount = $I + P$ = 1800 + 3000 = 4800

Hence, the correct option is d.

Question:23

If a sum of 2000 is lent out at 2% per annum for 10 years under simple interest, then the amount is

a 1400

b 2400

c 200

d 1500

Solution:

It is given that,

Sum (P) = 2000
Rate (R) = 2%
Time (T) = 10 years

$I = \frac{P \times R \times T}{100} = \frac{2000 \times 2 \times 10}{100} = 400$

Amount = $I + P$ = 400 + 2000 = 2400

Hence, the correct option is b.

Question:24

If interest on x for 2 years at R% per annum is 80, the interest on $2x$ for one year at R% per annum is

a 160
b 40
c 80
d 120

Solution:

It is given that,
Sum (P_1) = x
Rate (R_1) = R%
Time (T_1) = 2 years
Interest (I_1) = 80

$I_1 = \frac{P_1 \times R_1 \times T_1}{100} \Rightarrow 80 = \frac{x \times R \times 2}{100} = \frac{2Rx}{100} \quad \ldots\left(1\right)$

Now,
Sum (P_2) = $2x$
Rate (R_2) = R%
Time (T_2) = 1 year

$I_2 = \frac{P_2 \times R_2 \times T_2}{100} = \frac{2x \times R \times 1}{100} = \frac{2Rx}{100} = 80 \quad [\text{From } (1)]$

Therefore, I_2 = 80

Hence, the correct option is c.

Question:25

At simple interest a sum becomes $\frac{49}{40}$ of itself in $2\ \frac{1}{2}$ years. The rate of interest per annum is

a 7%

b 8%

c 12%

d 9%

Solution:

Amount = $\frac{49}{40}$ times the sum = $\frac{49}{40}P$

Simple interest (I) = Amount – Sum = $\frac{49}{40}P - P = \frac{9}{40}P$

Let the sum (P) be x.

Then, simple interest (I) = $\frac{9}{40}x$

Rate (R) = R%

Time (T) = $2\ \frac{1}{2}$ years = $\frac{5}{2}$ years

$$I = \frac{P \times R \times T}{100} \Rightarrow R = \frac{100 \times I}{P \times T} \quad = \frac{100 \times \frac{9}{40}x}{x \times \frac{5}{2}} \quad = \frac{45}{5} \quad = 9\%$$

Hence, the correct option is d.

Question:26

At what rate percent per annum simple interest will a sum double itself in 10 years?

a 8%

b 10%

c 12%

d $12\ \frac{1}{2}$%

Solution:

Amount = 2 times the sum = $2P$

Simple interest (I) = Amount – Sum = $2P - P = P$

Let the sum (P) be x.

Then, simple interest (I) = x

Rate (R) = R%

Time (T) = 10 years

$I = \frac{P \times R \times T}{100} \Rightarrow R = \frac{100 \times I}{P \times T} \quad = \frac{100 \times x}{x \times 10} \quad = 10\%$

Hence, the correct option is b.

Question:27

In what time will a sum of 8000 amount to 8360 at 6% per annum simple interest?

a 8 months

b 9 months

c $1\frac{1}{4}$ months

d $1\frac{1}{2}$ years

Solution:

It is given that,

Amount = 8360

Sum = 8000

Simple interest (I) = Amount – Sum = 8360 – 8000 = 360

Also,

Rate (R) = 6%

Time (T) = T years

$I = \frac{P \times R \times T}{100} \Rightarrow T = \frac{100 \times I}{P \times R} \quad = \frac{100 \times 360}{8000 \times 6} \quad = \frac{3}{4} \text{ years} \quad = \frac{3}{4} \times 12 \text{ months} \quad = 9 \text{ months}$

Hence, the correct option is b.

Question:28

If a, b and c are three sums of money such that b is the simple interest on a and c is the simple interest on b for the same time and same rate. Which of the following is correct?

a $abc = 1$

b $c^2 = ab$

c $b^2 = ac$

d $a^2 = bc$

Solution:

It is given that,

Simple interest (I_1) = b

Sum (P_1) = a

Rate (R_1) = R%

Time (T_1) = T years

Now,

$I_1 = \frac{P_1 \times R_1 \times T_1}{100} \Rightarrow b = \frac{a \times R \times T}{100} \Rightarrow R \times T = \frac{100b}{a} \quad \ldots . \left(1 \right)$

Also,

Simple interest (I_2) = c

Sum (P_2) = b

Rate (R_2) = R%

Time (T_2) = T years

Now,

$I_2 = \frac{P_2 \times R_2 \times T_2}{100} \Rightarrow c = \frac{b \times R \times T}{100} \Rightarrow R \times T = \frac{100c}{b} \quad \ldots . \left(2 \right)$

On equating 1 and 2, we get

$\frac{100b}{a} = \frac{100c}{b} \Rightarrow b^2 = ac$

Hence, the correct option is c.

Question:29

The simple interest at R% per annum for n years will be n on a sum of

a n

b $100n$

c $\frac{100}{n}$

d $\frac{100}{n^2}$

Solution:

It is given that,

Simple interest (I) = n

Rate (R) = R%

Time (T) = n years

$I = \frac{P \times R \times T}{100} \Rightarrow P = \frac{100 \times I}{R \times T} = \frac{100 \times n}{R \times n} = \frac{100}{R}$

Hence, the correct option is c.

Question:30

The simple interest on a certain sum is $\frac{16}{25}$ of the sum. If the rate percent per annum and the time are numerically equal, then the rate percent is

a 8%
b 4%
c 6%
d 12%

Solution:

Let the sum (P) be x
Then, the simple interest (I) = $\frac{16}{25}x$

Also,
Rate (R) = R%
Time (T) = R years $\because therate percent per annum and the time are numerically equal$

$$I = \frac{P \times R \times T}{100} \Rightarrow R = \frac{100 \times I}{P \times T} \Rightarrow R = \frac{100 \times \frac{16}{25}x}{x \times R} \Rightarrow R \times R = \frac{64x}{x} \Rightarrow R \times R = 8 \times 8 \Rightarrow R = 8\%$$

Hence, the correct option is a.

Question:31

At which rate percent per annum simple interest will a sum triple itself in 16 years?

a 12%
b 10.5%
c 11.5%
d 12.5%

Solution:

Amount = 3 times the sum = 3P

Simple interest (I) = Amount – Sum = 3P – P = 2P

Let the sum (P) be x.
Then, simple interest (I) = 2x
Rate (R) = R%
Time (T) = 16 years

$$I = \frac{P \times R \times T}{100} \Rightarrow R = \frac{100 \times I}{P \times T} \quad = \frac{100 \times 2x}{x \times 16} \quad = 12.5\%$$

Hence, the correct option is d.