$$r = \frac{I \times 100}{pt} = \frac{50 \times 100 \times 12}{1000 \times 6} = 10\%$$

Tricks: Go by choices

For (b) A = 1000 + 1000 × rate of interest of 6 months

$$= 1000 + 1000 \times \frac{10}{2}(\%) = ₹1050$$

∴ option (b) is correct

Calculator Tricks:- GBC

For option (b)

$$r = \frac{10}{2} = 5\%$$

∴ A = 1000 + 5% button (press) = 1050 (True)

Example 4

Kapil deposited some amount in a bank for $7\frac{1}{2}$ years at the rate of 6% p.a. simple interest.

Kapil received ₹ 1,01,500 at the end of the term. Compute initial deposit of Kapil.

(a) ₹ 70,000   (b) ₹ 60,000   (c) ₹ 80,000   (d) None

Solution: Tricks :   Go by Choices

For option (a)

$$= 70,000 + [6 \times 7.5]\%$$

$$= ₹ 1,01,500 \text{ (True)}$$

∴ Option (a) is correct.

PAST EXAM QUESTIONS WITH SOLUTIONS (MEMORY BASED)

Q.1. ₹ 8, 000 becomes ₹ 10,000 in two years at simple interest. The amount that will become ₹ 6,875 in 3 years at the same rate of interest is :

(a) ₹ 4,850   (b) ₹ 5,000

(c) ₹ 5,500   (d) ₹ 5,275

[Nov. 2006]

Solution : Tricks

(b) S.I./year = $\frac{10000 - 8000}{2} = ₹1000$

$$r = \frac{1000 \times 100}{8000} = 12.5\%$$

$$P = \frac{Amt}{Amt \ at \ ₹1} = \frac{6875}{1 + 0.125 \times 3} = ₹5000$$

∴ (b) is correct.

Q.2. The rate of simple: interest on a sum of money is 6% p.a. for first 3 years, 8% p.a. for the next five years and 10% p.a. for the period beyond 8 years. If the simple interest accrued by the sum for a period for 10 years is ₹ 1,560. The sum is :

(a) ₹ 1,500   (b) ₹ 2,000

(c) ₹ 3,000   (d) ₹ 5,000

[Feb. 2007]

Solution : (b) is correct.

Single S.I For 1 yrs

$= (6 \times 3 + 8 \times 5 + 10 \times 2)\% = 78\%$

Tricks:

$P = \dfrac{Total\ S.I}{S.I\ on\ Rs1} = \dfrac{1560}{0.78} = ₹\ 2000$

(b) is correct

Q.3. A sum of money doubles itself in 10 years. The number of years it would treble itself is :

(a) 25 years   (b) 15 years

(c) 20 years   (d) None

[Feb. 2007]

Solution : (c) is correct.

Tricks :

$\dfrac{t_2}{t_1} = \dfrac{x_2 - 1}{x_1 - 1}$

or $\dfrac{t_2}{10} = \dfrac{3-1}{2-1}$ or, $t_2 = 20$ yrs.

(c) is correct

Q.4. A certain sum of money amounts to ₹ 6,300 in two years and ₹7,875 in three years nine months at simple interest. Find the rate of interest per annum :

(a) 20%   (b) 18%

(c) 15%   (d) 10%

[May 2007]

Solution : (a) is correct.

Tricks:

S.I. Per year =

$\dfrac{Amount\ for\ 3.75\ yrs - Amount\ for\ 2yrs}{(3.75 - 2)\ yrs}$

$= ₹ 900$

$P = 6300 - 2 \times 900 = ₹\ 4500$

$r = \dfrac{900 \times 100}{4500 \times 1} = 20\%$

Q.5. A person borrows ₹ 5,000 for 2 years at 4% p.a. simple interest. He immediately lends to another person at $6\dfrac{1}{4}\%$ p.a. for 2 years. Find his gain in the transaction per year:

(a) ₹ 112.50   (b) ₹ 125

(c) ₹ 225   (d) ₹ 167.50

[Nov. 2007]

Solution : (a) % Gain $=$

$6\dfrac{1}{4}\% - 4 = 2.25\%$

S.I for 2 yrs. $= 5000 \times 2.25\% \times 2 = ₹\ 225$

S.I per yr. $= 5000 \times 2.25\% = ₹ 112.50$

∴ (a) is correct

Q.6. Two equal sums of money were lent at simple interest at 11% p.a. for $3\dfrac{1}{2}$ years and $4\dfrac{1}{2}$ years respectively. If the difference in interests for two periods was ₹ 412.50, then each sum is:

(a) ₹ 3,250   (b) ₹ 3,500

(c) ₹ 3,750   (d) ₹ 4,350

[Feb. 2008]

Solution : (c) **Tricks :** Difference in interest is due to time

∴ rate of interest for the whole duration $= (11 \times 4.5 - 11 \times 3.5) = 11\%$

∴ $P = \dfrac{Total\ S.I}{Interest\ on\ ₹1} = \dfrac{412.50}{0.11} = ₹3750$

(c) is correct

Q.7. In how much time would the simple interest on a certain sum be 0.125 times the principal at 10% per annum ?

(a) $1\dfrac{1}{4}$ years   (b) $1\dfrac{3}{4}$ years

(c) $2\dfrac{1}{4}$ years   (d) $2\dfrac{3}{4}$ years

[June 2008]

Solution : (a) is correct

Tricks : $t = \dfrac{I/P}{r\%} = \dfrac{0.125}{0.10} = 1.25\ yrs$

Detail: $S.I = \dfrac{p.r.t}{100}$

or; $0.125P = \dfrac{P.10 \times t}{100}$

or $t = 0.125 \times 10 = 1.25\ yrs$

∴ (a) is correct

Q.8. Find the numbers of years in which a sum doubles itself at the rate of 8% per annum.

(a) $11\dfrac{1}{2}$ (b) $12\dfrac{1}{2}$

(c) $9\dfrac{1}{2}$ (d) $13\dfrac{1}{2}$

[Dec. 2008]

Solution : (b) is correct

Tricks : $t = \dfrac{(x-1) \times 100}{r}$

$= \dfrac{(2-1) \times 100}{8} = 12.5\ yrs$

Q.9. The time by which a sum of money is 8 times of itself if it double itself in 15 years.

(a) 42 years   (b) 43 years

(c) 45 years   (d) 46 years

[June 2009]

Solution : (c) is correct

It is Compound Interest Qts.

Tricks : $2^{t_2} = 8^{15}$

or $2^{t_2} = (2^3)^{15}$: $t_2 = 45\ yrs$

Q.10. What is the rate of simple interest if a sum of money amount ₹ 2,784 in 4 years and ₹2,688 in 3 years ?

(a) 1% p.a.   (b) 4% p.a.

(c) 5% p.a.   (d) 8% p.a.

[June 2009]

Solution : (b) is correct

S.I. pa $= \dfrac{Difference\ in\ S.I}{Difference\ in\ time}$

$= \dfrac{SI_2 - SI_1}{t_2 - t_1} = \dfrac{2784 - 2688}{4 - 3} = ₹\ 96$

Principal $= ₹(2688 - 3 \times 96) = ₹\ 2400$

$r = \dfrac{I \times 100}{p \times t} = \dfrac{96 \times 100}{2400 \times 1} = 4\%$

Q.11. If a simple interest on a sum of money at 6% p.a. for 7 years is equal to twice of simple interest on another sum for 9 years at 5% p.a. The ratio will be:

(a) 2:15   (b) 7:15

(c) 15:7   (d) 1:7

[June 2011]

Solution : (c) is correct

$$P_1 . \frac{6.7}{100} = 2 \times \frac{P_2 . 9.5}{100}$$

or $\frac{P_1}{P_2} = 2 \times \frac{9 \times 5}{6 \times 7} = \frac{15}{7} \Rightarrow \frac{P_1}{P_2} = \frac{15}{7}$

Tricks:- GBC

Q.12. By mistake a clerk, calculated the simple interest on principal for 5 months at 6.5% p.a. instead of 6 months at 5.5% p.a. If the error in calculation was ₹25.40. The original sum of principal was ____.

(a) ₹ 60,690   (b) ₹ 60,960

(c) ₹ 90,660   (d) ₹ 90,690

Solution : (b) is correct

$$P = \frac{25.40}{\frac{5.5}{100} \times \frac{6}{12} - \frac{6.5}{100} \times \frac{5}{12}}$$

$$= \frac{25.40 \times 1200}{5.5 \times 6 - 6.5 \times 5} = ₹ 60,960$$

Q.13. If the Simple Interest on ₹1,400 for 3 years is less than the simple interest on ₹ 1,800 for the same period by ₹ 80, then the rate of interest is:

(a) 5.67%   (b) 6.67%

(c) 7.20%   (d) 5.00%

[Dec. 2011]

Solution : (b) is correct.

Tricks : $r = \frac{80 \times 100}{(1800 - 1400) \times 3}$

$$= 6.67\%$$

Q.14. The S.I. on a sum of money is $\frac{4}{9}$ of the principal and the No. of years is equal to the rate of interest per annum. Find the rate of interest per annum?

(a) 5%   (b) 20/3%

(c) 22/7%   (d) 6%

[June 2012]

Solution : (b)

$$S.I. = \frac{p.r.r}{100} \Rightarrow \frac{4}{9} p. = p. \left(\frac{r}{10}\right)^2$$

$$\therefore \frac{r}{10} = \frac{2}{3} \therefore r = \frac{20}{3}\%$$

Q.15. Simple interest on ₹2,000 for 5 months at 16% p.a. is ____.

(a) ₹133.33   (b) ₹133.26

(c) ₹134.00   (d) ₹132.09

[June 2012, Dec. 2012]

Solution : (a)

$$S.I. = 2000 \times \frac{5}{12} \times \frac{16}{100} = ₹133.33$$

Q.16. How much investment is required to yield an Annual income of ₹420 at 7% p.a. Simple interest.

(a) ₹ 6,000   (b) ₹ 6,420

(c) ₹ 5,580   (d) ₹ 5,000

[Dec. 2012]

Solution : (a) $P = \frac{420 \times 100}{7 \times 1} = ₹ 6000$

Calculator Tricks II GBC :

P = 420 ÷ 7% button = ₹ 6000

Q.17. Mr. X invests ₹ 90,500 in post office at 7.5% p.a. simple interest. While calculating the rate was wrongly taken as 5.7% p.a. The difference in amounts at maturity is ₹ 9,774. Find the period for which the sum was invested.

(a) 7 years   (b) 5.8 years

(c) 6 years   (d) 8 years

[Dec. 2012]

Solution : (c) Tricks

$$\frac{9774 \times 100}{90,500 \times (7.5 - 5.7)} = 6 \text{ yrs}$$

Q.18. If the sum of money when compounded annually become ₹1140 in 2 years and ₹1710 in 3 years at rate of interest

(a) 30%   (b) 40%

(c) 50%   (d) 60%

[June 2013]

Solution : (c) Interest in 3rd

yr = ₹ 1710 - ₹1140

= ₹ 570

Tricks Note : For 3rd yr ; it will be like S.I

$$r = \therefore \frac{I \times 100}{P.t} = \frac{570 \times 100}{1140 \times 1} = 50\%$$

Tricks II Go by choices.

For (c) A = 1140 + 50% (Calculator)

= ₹ 1710

∴ (c) is correct

Q.19. In what time will a sum of money double itself at 6.25% p.a. at simple interest

(a) 5 yrs   (b) 8 year

(c) 12 yrs   (d) 16 yrs

[Dec. 2013]

Solution : (d) is correct.

Tricks :

$$t = \frac{(2-1) \times 100}{6.25} = 16 \text{ years}$$

Q.20. What principal will amount to ₹370 in 6 years at 8% p.a. at simple interest

(a) ₹ 210   (b) ₹ 250

(c) ₹310   (d) ₹ 350

[Dec. 2013]

Solution : (b) is correct

Tricks : $P = \frac{370}{1 + 6 \times 0.08} = ₹ 250$

Calculator Tricks :- GBC

(b) Amt = 250 + (6 × 8)% button press = 370

Q.21. If a sum triples in 15 yrs at Simple rate of interest then the rate of interest per annum will be

(a) 13.0%   (b) 13.3%

(c) 13.5%   (d) 18%

[June 2014]

Solution : (b) is correct

Tricks $r = \frac{(3-1) \times 100}{1 \times 15} = 13.3\%$

Calculator Tricks :- GBC

(b) r = 15 × 13.333% = 200%

A = 1 + 200% (button) = 3

∴ (b) is correct

Q.22. A certain sum of money was invested at simple rate of interest for three years. If it was invested at 7% higher, the interest have been ₹ 882 more, then sum has been invested at that rate was

(a) ₹ 12,600   (b) ₹ 6,800
(c) ₹ 4,200   (d) ₹ 2,800

[Dec. 2014]

Solution : (c) is correct
S.I = ₹882   for r = 7%
t = 3 years.

$$P = \frac{I \times 100}{rt} = \frac{882 \times 100}{7 \times 3} = ₹\,4200$$

Calculator Tricks :- GBC

Q.23. A sum of money will be doubled itself in 8 years at S.I. In how many years the sum will be tripled itself ?

(a) 20 years   (b) 12 years
(c) 16 years   (d) None

[June 2015]

Solution : (c) is correct.

Tricks : $\frac{t_2}{8} = \frac{3-1}{2-1}$

$t_2 = 16$ yrs.

Q.24. A sum of 44,000 is divided into 3 parts such that the corresponding interest earned after 2 years, 3 years and 6 years may be equal at the rate of simple interest are 6% p.a. 8% p.a. & 6% p.a., respectively. Then the smallest part of the sum will be.

(a) ₹ 4,000   (b) ₹ 8,000
(c) ₹ 10,000   (d) ₹ 12,000

[June 2015]

Solution : (b) is correct.

Tricks: $p_1 : p_2 : p_3 = \frac{1}{r_1 t_1} : \frac{1}{r_2 t_2} : \frac{1}{r_3 t_3}$

$$= \frac{1}{2 \times 6} : \frac{1}{8 \times 3} : \frac{1}{6 \times 6}$$

$$= \left[\frac{1}{12} : \frac{1}{24} : \frac{1}{36}\right] \times 72 \text{ LCM of denominators}$$

= 6:3:2

So, Smallest principal

$$= \frac{44000}{6+3+2} \times 2 = ₹\,8000$$

Q.25. No. of years a sum of money becomes 4 times itself at 12% p.a. at simple interest:

(a) 20   (b) 21
(c) 25   (d) 30

[Dec. 2015]

Solution : (c) is correct

Tricks: $t = \frac{(4-1) \times 100}{1 \times 12} = 25$ yrs.

Q.26. If a person lends ₹ 6,000 for 4 years and ₹ 8,000 for 3 years at S.I. The total interest earned is ₹ 2400 then the rate of interest is......

(a) 5%   (b) 6%
(c) 7%   (d) 8%

[Dec. 2016]

Solution : (a) is correct.

Tricks: Go by choices.

For (a) ;

Total SI = 6000×4×5% + 8000×3 ×5%

= ₹2400

So, (a) is correct.

Q.27. In simple interest, a certain sum becomes ₹ 97,920 in 3 years, and ₹ 1,15,200 in 5 years, then the rate of interest is:

(a) 10%   (b) 11.2%
(c) 12%   (d) 13.6%

[June 2018]

Solution : (c)

Tricks :

S.I p.a. $= \frac{1,15,200 - 97,920}{5-3}$

= ₹ 8640

Principal = 97,920 - 3 yrs interest = 97,920 - 3 × 8640 = ₹72,000

$$r = \frac{8640 \times 100}{72000} = 12\%$$

Calculator Tricks :

Amounts = 72000 + (12×3 = 36) % button = ₹ 97,920 (True)

So, option (C) is correct.

Q.28. A person borrows ₹ 5,000 for 2 years at 4% per annual simple interest. He immediately lends to another person at $6\frac{1}{4}$%. Per annual for 2 years find his gain in the transaction .

(a) ₹ 112.50   (b) ₹ 225
(c) ₹ 125   (d) ₹ 107.50

[May 2018]

Solution : (b)

Interest Gain $= \left(6\frac{1}{4} - 4\right)$

$= 2\frac{1}{4} = 2.25\%$

So, Interest Gain

$$= \frac{5000 \times 2 \times 2.25}{100} = ₹\,225.$$

Q.29. A certain money doubles itself in 10 years when deposited on simple interest. It would triple itself in

(a) 30 years   (b) 20 years
(c) 25 years   (d) 15 years

[Nov. 2018]

Solution : (b)

Tricks : See Simple Interest (Quicker BMLRS)

$$\frac{t_2}{t_1} = \frac{x_2 - 1}{x_1 - 1}$$

$$\Rightarrow \frac{t_2}{10} = \frac{3-1}{2-1} \Rightarrow t_2 = 20\,yrs.$$

Q.30. A certain sum of money Q was deposited for 5 year and 4 months at 4.5% simple interest and amounted to ₹ 248, then the value of Q is

(a) ₹ 240   (b) ₹ 200
(c) ₹ 220   (d) ₹ 210

[Nov. 2018]

Solution : (b)

t = 5 yrs 4 months $= 5 + \frac{4}{12} = \frac{16}{3}$ yrs

$$A = Q\left(1 + \frac{rt}{100}\right)$$

or $248 = Q\left[1 + \frac{4.5}{100} \times \frac{16}{3}\right]$

$$\therefore Q = \frac{248 \times 300}{372} = Rs.\,200$$

Tricks : GBC

Rates for 5 yrs 4 Months = 5 × 4.5 %+ one third of 4.5% = 24%

Note : 4 months means one third of one year, so rate for 4 months = one third of one year interest rate.

(b) Amounts = 200 + 24% = 248 (True)

So, (b) is correct.

Q.31. The certain sum of money became ₹ 692 in 2 yrs. and ₹ 800 in 5 yrs. then the principle amount is

(a) ₹ 520 (b) ₹ 620

(c) ₹ 720 (d) ₹ 820

[June 2019]

Solution : (b)

Tricks :- If a certain sum of money becomes A_1 in t_1 years and A_2 in t_2 years then

$$\text{S.I. per annum} = \frac{A_2 - A_1}{t_2 - t_1}$$

$$\therefore \text{ S.I. p.a} = \frac{800 - 692}{5 - 2}$$

$$= ₹ 36.$$

∴ Principal = A - Interest

= 692 - Interest of 2 yrs.

$= 692 - 2 \times 36 = ₹ 620.$

(b) is correct.

Q.32. A sum of money amount to ₹ 6,200 in 2 years and ₹ 7,400 in 3 years as per S.I. then the principal is

(a) ₹ 3,000 (b) ₹ 3,500

(c) ₹ 3,800 (d) None

[June 2019]

Solution : (c)

Tricks:- S.I. p.a $= \dfrac{7400 - 6200}{3 - 2}$

$= ₹ 1200.$

∴ Principal $= 6200 - 2 \times 1200$

$= ₹ 3800.$

Q.33. P = ₹ 5,000; R = 15%; T = $4\frac{1}{2}$

using $I = \dfrac{PTR}{100}$ then I will be $I = \dfrac{Prt}{100}$

(a) ₹ 3,375 (b) ₹ 3,300

(c) ₹ 3,735 (d) None

[June 2019]

Solution : (a)

$$I = \frac{5000 \times 15 \times 4.5}{100} = 3375$$

[Use Calculator ; Never Write]

Q.34. In simple interest if the principal is ₹ 2,000 and the rate and time are the roots of the equation $x^2 - 11x - 30 = 0$ then simple interest is

(a) ₹ 500 (b) ₹ 600

(c) ₹ 700 (d) ₹ 800

[June 2019]

Solution : (b)

$\because x^2 - 11x + 30 = 0$

or $x^2 - 5x - 6x + 30 = 0$

or $x(x - 5) - 6(x - 5) = 0$

or $(x - 5)(x - 6) = 0$

∴ $x = 5 ; 6$

If r = 5% then t = 6 yrs.

$$\therefore \text{S.I} = \frac{Prt}{100} = \frac{2000 \times 5 \times 6}{100}$$

$= ₹ 600.$

(b) is correct.

Q.35. If the interest of a money is equal to its one by nine, the rate of interest and time are equal then find rate of interest is.

(a) $3\frac{1}{3}$% (b) 4½%

(c) 3% (d) 3.5%

[Dec. 2019]

Solution : (a)

Let Principal = ₹ 1

$S.I = \dfrac{1}{9}$

Given ; r = t

$\therefore S.I = \dfrac{P.r.t}{100}$

or $\dfrac{1}{9} = 1 \cdot \dfrac{r.r}{100}$

or ; $r^2 = \dfrac{100}{9} \Rightarrow r = \dfrac{10}{3} = 3\frac{1}{3}\%$

Q.36. 1/7 of a money is deposited at 4% per annum, 1/2 of a money deposited at 5% per annum and the remaining at the rate of 6%, then total interest gained ₹ 730 find deposit amount is

(a) ₹ 14000 (b) ₹ 215500

(c) ₹ 212800 (d) ₹ 214500

[Dec. 2019]

Solution : (a)

Calculator Tricks : GBC

For (a) S.I. =

$\left(\dfrac{1}{7} \times 14000 = 2000\right) \times 4\%$ button *i.e.*

type 2000 then press multiply button then type 4 then percentage button [never press any other button]

then $\left(\dfrac{1}{2} \times 14000 = 7000\right) \times 5\%$ button *i.e*

type 7000 then press multiply button then type 5 then percentage button and

$(14000 - 2000 - 7000) \times 6\%$ button *i. e.*

type 5000 then press multiply button then type 6 then percentage button

then Press GT button ; we get ₹ 730.

∴ (a) is correct.

Q.37. Ram deposited ₹ 12000 in a bank at 10% per annum and remaining amount deposit in other bank at 20% per annum, if he received interest according to 14% per annum find the Ram's amount.

(a) ₹ 20000 (b) ₹ 22000

(c) ₹ 30000 (d) ₹ 25000

[Dec. 2019]

Solution : (a)

Tricks : GBC

For (a) S.I on ₹ 20,000

$\leqq 20,000 \times 14\%$

= ₹ 2800.

S.I. on ₹ 12,000 = 12000 × 10%

= ₹ 1200.

Rest principal = 20000 - 12000

= ₹ 8000.

S.I. on rest money = 8000 × 20%

= 1600.

Sum of these S.I.

= 1200 + 1600 = 2800 (True)

∴ (a) is correct.

Q.38. If the difference between interest received by two persons A and B on the same sum of ₹1500 for 3 years is ₹ 18. Then what is the difference between the two rates of interest.

(a) 1%   (b) 2.5%

(c) 3%   (d) 0.4%

[Dec. 2019]

Solution : (d)

Principal same ; time same but interest differ by ₹ 18.

It means rate differs.

$$\therefore r = \frac{I \times 100}{p \times r}$$

Here ; r = difference between rates.

$$\therefore r = \frac{18 \times 100}{1500 \times 3} = 0.4\%$$

Detail : Let their rates are r_1 and r_2

$$\therefore \frac{1500 \times r_1 \cdot 3}{100} - \frac{1500 \times r_2 \cdot 3}{100} = 18$$

$$\text{or } \frac{\overset{15}{\cancel{1500}} \times 3}{\cancel{100}}(r_1 - r_2) = 18$$

$$\text{or } r_1 - r_2 = \frac{18}{15 \times 3} = 0.4\%$$

Q.39. If the compound interest on a certain sum for 2 years at 3% p.a. is ₹ 1015. What would be the simple interest on the sum at the same rate and same time is

(a) 1005   (b) 1010

(c) 1000   (d) 1003

[Dec. 2019]

Solution : (c)

Tricks : GBC

For (c) S.I. for 2 yrs.

= ₹ 1000.

$\therefore$ S.I for 1 yr. = ₹ 500. i.e. $(1000 \div 2)$

C.I for 1st yr. = S.I of 1st yr. = ₹ 500.

C.I for 2nd yr. = S.I for 1st yr + Interest on this S.I

$$= 500 + \frac{500 \times 3 \times 1}{100} = \text{Rs. } 515.$$

$\therefore$ Total C.I = 500 + 515 = ₹ 1015 [True]

Calculator Tricks for C.I

C.I. = 500 + (500 + 5% button)

= ₹1015 (True)

Q.40. What sum of money will produce ₹ 42,800 as an interest in 3 years and 3 months at 2.5% p.a simple interest ?

(a) ₹ 3,78,000   (b) ₹5,26,769

(c) ₹ 4,22,000   (d) ₹ 2,24,000

[Dec. 2020]

Solution : time = t = 3 years & 3 months

$$= 3 + \frac{3}{12} = 3.25 \text{ years}$$

Formula

$$P = \frac{1 \times 100}{t \times r} = \frac{42,800 \times 100}{(3.25) \times (2.5)}$$

= ₹ 5,26,769.23 = ₹ 5,26,769/-

(b) is correct.

Calculator Tricks

P = 42,800 ÷ 2.5% button ÷ (3.25)

= ₹ 5,26,769

Q.41. A certain sum amounted to ₹575 at 5% in a time in which ₹ 750 amounted to ₹ 840 at 4%. If the rate of interest is simple, find the sum—

(a) 525   (b) 550

(c) 515   (d) 500

[Jan. 2021]

Solution : (d) is correct S.I. = A − P = 840 − 750 = ₹ 90

$$t = \frac{I \times 100}{p.r.} = \frac{90 \times 100}{750 \times 4} = 3 \text{ years}$$

TRICKS

Then use GBC (Go by choices) with calculator.

[∴ 1 year interest rate = 5%

∴ 3 years interest rate = 3 × 5 = 15%]

(a) A = 525 + (3 × 5)% = 603.75 ≠ 575

(a) wrong

Amount ₹ 603.75 is more than 575

So, principal must be less than ₹ 525.

For option (c)

A = 515 + (3 × 5)% = 592.25 ≠ 575

So option (d)

A = 500 + 15% = 575 (True)

(d) is correct.

Q.42. A man invested one-third of his capital at 7% one fourth at 8% and the remainder at 10%. If the annual income is ₹ 561. The capital is -

(a) ₹ 4,400   (b) ₹ 5,500

(c) ₹ 6,600   (d) ₹ 5,800

[Jan. 2021]

Solution : (c) is correct

Tricks

Remainder

$$= 1 - \frac{1}{3} - \frac{1}{4} = \frac{12-4-3}{12} = \frac{5}{12}$$

Single rate of interest

$$= \left(7 \times \frac{1}{3} + 8 \times \frac{1}{4} + 10 \times \frac{5}{12}\right)\%$$

[Do by using calculator]

= 8.5%

Annual income = Annual interest = ₹561

Capital = Interest ÷ rate of interest

= 561 ÷ 8.5% (button)

= ₹ 6600

∴ (c) is correct

Q.43. Certain sum amounts to ₹15748 in 3 years at simple interest at r% p.a. The same sum amounts to ₹ 16,510 at (r+2)% p.a. simple interest in the same time. What is the value of r?

(a) 10%   (b) 8%

(c) 12%   (d) 6%

[July 2021]

Solution : (b) is correct

Due to increase in interest by 2% in 3 years

Interest increase

= 16510 − 15748

= ₹ 762

So, $P = \frac{I \times 100}{r.t.} = \frac{762 \times 100}{2 \times 3} = ₹ 12,700$

Then apply tricks GBC

(a) A = 12700 + (3 × 10% = 30%) button ≠ 15748

So (a) Wrong

(b) A = 12700 + (3 × 8% = 24%) button

= ₹ 15748 (True)

So (b) correct

Q.44. Two equal amounts of money are deposited in two banks each at 15% p.a. S.I. fix 3.5 year in the bank and fix 5 years respectively. The difference between the interest amount from the bank is ₹ 144. Find the sum

(a) ₹ 620   (b) ₹ 640

(c) ₹ 820   (d) ₹ 840

[Jan. 2021]

Solution : (b) is correct

Let Each deposit = P

Tricks

Rate of interest for 3.5 years

= 3.5 × 15 = 52.5% pa S.I.

Rate of interest for 5 years = 5 × 15 = 75% pa S.I.

Difference in rate of interest

= 75 − 52.5% = 22.5% pa S.I.

∴ P = Interest difference ÷ Rate of interest difference

= 144 ÷ 22.5% (button) = ₹ 640.

Detail each

Let Principal money = P

From Question

$$\frac{P \cdot 15 \times 5}{100} - \frac{P \cdot 15 \times 3.5}{100} = 144$$

or $\frac{P}{100}$ [75 − 52.5] = 144

or P = $\frac{144 \times 100}{22.5}$ = ₹ 640

(b) is correct

Q.45. A sum of money in simple interest doubles itself in 7 years. How many years will it take to triple itself?

(a) End of 12 years

(b) End of 14 years

(c) End of 18 years

(d) End of 16 years   *[Dec. 2021]*

Solution : (b)

Tricks

A certain sum of money becomes x_1 times in t_1 years and x_2 times in t_2 years at same rate of S.I. The relationship is

$$\frac{t_2}{t_1} = \frac{x_2 - 1}{x_1 - 1}$$

∴ $\frac{t_2}{7} = \frac{3-1}{2-1} = t_2 = 7 \times 2 = 14$ years.

Q.46. Simple interest on a sum of money is amount to ₹ 59,000 in 3 years and ₹ 62,000 in 4 years at same rate of interest. What are the principal amount and rate of interest?

(a) ₹ 50,000, 6%

(b) ₹ 45,000, 5.5%

(c) ₹ 55,000, 5%

(d) ₹ 52,000, 7%   *[Dec. 2021]*

Solution : (a)

Tricks

S.I. Pa = $\frac{62000 - 59000}{4 - 3}$ = ₹ 3,000/-

Principal

P = 59000 − 3 × SI Pa

= 59000 − 3 × 3000 = ₹ 50,000/-

Rate of Interest

= r = $\frac{I \times 100}{P.t}$ = $\frac{3000 \times 100}{50,000 \times 1}$

= 6%

Q.47. An amount is lent at R% simple interest for R years and the simple interest amount was one fourth of the principal amount. Then it is

(a) 5   (b) 6

(c) 5½   (d) 6½

[Dec. 2021]

Solution : (a)

Let Principal = P

Interest = $\frac{1}{4}$P

∴ rate = $\frac{I \times 100}{P.t}$

or R = $\frac{\frac{1}{4}P \times 100^{25}}{P \times R}$

or; R² = 25 ⟹ R = 5%

Q.48. An investor is saving to pay off an obligation of ₹ 15,250 which will be due in seven years, if the investor is earning 7.5% simple interest rate per annum, he must deposit ₹ _____ to meet the obligation.

(a) 8,000   (b) 9,000

(c) 10,000   (d) 11,000

[June 2022]

Solution : FV = ₹ 15,250

S.I rate for 1 yr = 7.5%

∴ S.I for 7 yrs = 7 × 7.5

= 52.5 %

Tricks

PV = P = $\frac{A}{1 + \frac{rt}{100}}$ = $\frac{15250}{1 + \frac{52.5}{100}}$

= $\frac{15250}{1.525}$

= ₹ 10,000

∴ (c) is correct

Q.49. The annual rate of simple interest is 12.5%. In how many years does the principal double?

(a) 11 years   (b) 9 years

(c) 8 years   (d) 7 years

[June 2022]

Solution : Tricks

t = $\frac{(m-1) \, 100}{r}$

$\frac{(2-1) \times 100}{12.5}$ = 8 yrs.

Calculator Tricks

(2−1) ÷ 12.5% button = 8 yrs

(c) is correct.

Q.50. A farmer borrowed ₹ 3600 at the rate of 15% simple interest per Annum. At the end of 4 years. He cleared this account by paying ₹ 4000 and a cow. The cost of the cow is :

(a) ₹ 1000   (b) ₹ 1200

(c) ₹ 1550   (d) ₹ 1760

[Dec. 2022]

Solution: *Given :*

Let P = Principle = ₹ 3600

r = rate of interest = 15%

t = time = 4 years

Simple Interest

$$= \frac{p \times r \times t}{100} = \frac{3600 \times 15 \times 4}{100}$$

$$= ₹\ 2160$$

Total amount payable after 4 years

$$= 3600 + 2160 = ₹\ 5760$$

Which is equal to ₹ 4000 + cost of 1 cow

$\therefore$ Cost of 1 cow $= 5760 - 4000$

$$= ₹\ 1760$$

$\therefore$ (d) is correct.

Q.51. Mr. Ram invested a total of ₹ 1,00,000 in two different banks for a fixed period. The first bank yields an interest of 9% per annum and second, 11% per annum. If the total interest at the end of one year is 9.75% per annum, then the amount invested in these banks are respectively:

(a) ₹ 52,500, ₹ 47,500

(b) ₹ 62,500, ₹ 37,500

(c) ₹ 57,500, ₹ 42,500

(d) ₹ 67,500, ₹ 32,500

Solution :

Trick-I

Investment ratio =

I   II
9   11

9.75
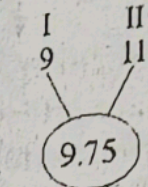
1.25 : 0.75

125 : 75 ÷ 25

5 : 3

$\therefore$ Investment in 1st bank

$$= \frac{1,00,000}{5+3} \times 5 = 62,500$$

in 2nd bank $= \dfrac{1,00,000}{5+3} \times 3 = 37,500$

(b) is correct.

Trick-II

GBC

Total interest $= 1,00,000 \times 9.75\%$

$$= ₹\ 9750$$

(b) Total Interest (by Calculator)

$62,500 \times 9\% =$

$37,500 \times 11\% =$ (GT button)

Press $= ₹\ 9,750$ (True)

$\therefore$ (b) is correct.