Quantitative Aptitude

Compound Interest

Level-1

Q1 A person invests Rs.25000 for 4 years and the rate of interest is 10% per annum compounded annually. Find the total amount he will get after 4 years.
(A) 34555.5 (B) 36602.5
(C) 34655.5 (D) 32156.2
(E) None of these

Q2 A person invested an amount of Rs. 18000 in a Mutual fund scheme for 2 years at compound interest rate 8% per annum compounded annually. How much will he get on maturity of the mutual fund?
(A) 20165.5 (B) 20995.2
(C) 20645.5 (D) 22203.5
(E) None of these

Q3 **A person invested an amount of Rs. 12000 in a Mutual fund scheme for 2 years at compound interest rate 8% per annum compounded annually. How much amount will he get on maturity of the mutual fund?**
(A) 12990.8 (B) 13996.8
(C) 11654.8 (D) 12164.8
(E) None of these

Q4 A person has Rs.25000 and it is invested for 2 years at the rate of interest of 20% and after 2 years finds the value of compound interest he get.
(A) 15000 (B) 11000
(C) 12000 (D) 18000
(E) None of these

Q5 A person invests a sum of money at 15% per annum for 2 years and after 2 years he gets compound interest of Rs.3225. Find the sum of money he invested.
(A) 10000 (B) 20000
(C) 12000 (D) 15000
(E) None of these

Q6 A person invests Rs.30000 in a scheme and in this scheme, he gets Rs.9930 as compound interest which is calculated as 10% per annum for a certain period of time. Find the time period for which the sum was invested.
(A) 3 years (B) 2 years
(C) 1 years (D) 4 years
(E) None of these

Q7 A person invests a sum of money at 5% per annum for 3 years and after 3 years he gets compound interest of Rs.3152.5. Find the sum of money he invested.
(A) 12000 (B) 15000
(C) 20000 (D) 18000
(E) None of these

Q8 In how many years will Arjun get compound interest of Rs. 10,625 on Rs. 40,000 invested at 12.5% rate of interest per annum?
(A) 2 (B) 3
(C) 4 (D) 5
(E) none of these

Q9 A person has Rs.18000 he invested it for 2 years and after 2 years he gets compound interest on the principal is Rs.7920. Find the rate of interest for which he invested.
(A) 20% (B) 25%
(C) 30% (D) 10%
(E) None of these

Q10 A person invested Rs. 61440 at x% compound intrest for 3 years,after 3 years he noticed the difference in ci and si is Rs.3000.Find the value of x.

(A) 12.5% (B) 34.7%
(C) 8.9% (D) 5.8%
(E) 10.6%

Q11 Tobo gets a sum of money $\frac{3}{2}$ times of its principal in 5 years at compound interest. Find the required time for which she will gain $\frac{81}{16}$ times of its principal for the same rate of interest.
(A) 15 years (B) 20 years
(C) 25 years (D) 10 years
(E) None of these

Q12 A sum of ₹ 200 deposited at CI doubles itself after 4 years. After 20 years it will become?
(A) 6400 (B) 3200
(C) 2300 (D) 8600
(E) 1209

Q13 A scheme offers Rs.22050 amount from the principal of certain amount after 2 years and the rate of the interest given is 5%. Find the compound interest offering by the scheme after 5 years on Principal.
(A) 2080 (B) 3150
(C) 2050 (D) 2250
(E) 3500

Q14 The sum of money invested at compound interest compounded annually amounts to $Rs.\ 2700$ in 2 years and to $Rs.\ 3240$ in 3 years. What was the amount of sum invested?
(A) $Rs.\ 2000$ (B) $Rs.\ 1580$
(C) $Rs.\ 1057$ (D) $Rs.\ 2150$
(E) $Rs.1875$

Q15 The simple interest on a certain sum for 2 years at 10% p.a. is Rs.100 .
Find the corresponding compound interest.
(A) Rs.100 (B) Rs.195
(C) Rs.105 (D) Rs.85
(E) None of these

Q16 **Sumit has Rs.(10000x) and it is invested for x years at the rate of interest of 5% and after x years he get Rs.2050 as compound interest, then finds the total amount he will get after x years.**
(Value of x is $0 < x \leq 2$).
(A) 22050 (B) 23050
(C) 24050 (D) 26050
(E) 21000

Q17 Suresh took a loan of Rs 12000 from a bank at the rate of $(x + 7)\%$ per annum at compound interest. Find the interest amount paid by Suresh after 2 years. Where x is 20% of 40.
(A) Rs 3660 (B) Rs 3690
(C) Rs 3820 (D) Rs 3840
(E) Rs 3870

Q18 Gopal took a loan of $Rs.15000$ at the rate of 20% compound interest for 3years. If he had taken same amount of $Rs.\ 15000$ at the rate of 25% compound interest for 2 years, find the amount of money he would have saved.
(A) $Rs.\ 2500$
(B) $Rs.\ 2482.5$
(C) $Rs.\ 3325.5$
(D) $Rs.\ 1523.5$
(E) None of these

Q19 A man invested Rs.20000 in a scheme which offers 40% rate of interest annually and the amount he get after a certain period of time. If the amount he get after completion of the time is Rs.34560 and the interest calculated half yearly, then find the time period.
(A) 1 yr (B) 1.5 yr
(C) 2 yr (D) 2.5 yr
(E) None of these

Q20 A person deposited a sum of ₹ 6000 in a bank at 5% per annum simple interest. Another person deposited ₹ 5000 at 8% p.a. compound interest. After two years, the difference of their interests will be
(A) ₹ 200 (B) ₹ 210
(C) ₹ 232 (D) ₹ 215
(E) none of these

Level-2

Q1 **Rs. 10000 is divided between Monu and Sonu, such that Monu's share at the end of 5 years is equal to Sonu's share at the end of 7 years, compounded annually at the rate of 10%. Find the approximate share of Monu.**

(A) 5475 (B) 6475
(C) 7480 (D) 5450
(E) None of these

Q2 If the simple interest of the sum for 4 years is Rs.2880 and the same sum is invested in a compound interest scheme at the rate of 10% per annum for 2 years. If the compound amount received after 2 years is Rs.5808, then find the rate of interest offered by simple interest.

(A) 10% (B) 12%
(C) 15% (D) 18%
(E) None of these

Q3 A person deposits Rs.10000 in a bank which gives him interest rate of 10% per annum and it was deposited in the bank for 1 year. If the interest calculated half yearly, then find the compound interest at the end of one year.

(A) 1025 (B) 1050
(C) 1060 (D) 1080
(E) None of these

Q4 If the difference between simple interest and compound interest on an amount at the rate of 40% per annum for 2 years is Rs 1020, then find the simple interest earned on the same amount for the rate of 15% per annum for 2 years.

(A) Rs 1750.25 (B) Rs 1845.50
(C) Rs 1912.50 (D) Rs 1892.60
(E) Rs 2000.25

Q5 X invested Rs. P at 10% per annum, Y invested Rs. (P – 4000) at the rate of 12% per annum. If they both get total compound interest at the end of two years Rs. 6412.8, then find capital invested by Y?

(A) Rs 16000 (B) Rs 12000
(C) Rs 20000 (D) Rs 24000
(E) Rs 21000

Q6 **A sum of Rs.18200 was borrowed by Manish and now it was decided that this sum will be paid back in 3 equal annual installments. How much will be each installment(approx) if the interest rate is 20% per annum which will be calculated compounded.**

(A) 8640 (B) 8420
(C) 8820 (D) 8950
(E) 8440

Q7 **A gave B Rs.10000 on compound interest for 2 years at 10% per annum. How much loss would A su er if she had given it to B for 2 years at 10% per annum simple interest?**

(A) 100 (B) 150
(C) 120 (D) 180
(E) None of these

Q8 Sumit get the simple interest on an amount invested at 12% per annum for 5 years is double than the compound interest on $Rs.\ 4000$ for 2 years at 10% per annum. Find the amount invested under simple interest.

(A) 2500 (B) 2800
(C) 2600 (D) 2700
(E) 3200

Q9 Raman took Rs 6800 as a loan which along with interest is to be repaid in two equal annual instalments. If rate of interest is compounded annually, then the value of each instalment is:

(A) Rs 4250 (B) Rs 3550
(C) Rs 4050 (D) Rs 4950
(E) Rs 4150

Q10 A person deposits Rs.10000 in a bank which gives him interest rate of 20% per annum and it was deposited in the bank for half year. If the

interest calculated Quaterly, then find the compound interest at the end of half year.

(A) 1050 (B) 1080
(C) 1025 (D) 1030
(E) None of these

Q11 If the difference between total compound interest in two years and total simple interest in three years on a certain sum at the rate of interest 12% p.a. is Rs 4224, then what will be the compound interest earned when two times of the same sum invested at 10% per annum for two years?

(A) Rs 12800 (B) Rs 16800
(C) Rs 16400 (D) Rs 17800
(E) Rs 19200

Q12 A person borrowed a sum of Rs.51000 and it was about to be returned in two installments. If the interest on the sum compounded annually at 4% per annum and the installments are equal, then find the amount of each installment.

(A) 27040 (B) 28050
(C) 29020 (D) 21050
(E) None of these

Q13 A loan of Rs.2550 is to be paid in two equal installments in half yearly installments. How much is each installment, if the interest is compounded half yearly at 8% per annum.

(A) 1345 (B) 1250
(C) 1342 (D) 1352
(E) None of these

Q14 A man invests Rs.10000 for 2 years at 7% p.a. compound interest reckoned yearly. Income tax at the rate of 5% on the interest earned is deducted at the end of each year. Find the approximate amount at the end of the second year.

(A) 12354.33 (B) 11374.33
(C) 15455.22 (D) 10354.11
(E) None of these

Q15 A loan was taken by a person and the amount to be repaid in two equal yearly installments. If the rate of interest is 10% per annum, compounded annually, and each installment paid is Rs.4840, then find the total interest charged on the sum.

(A) 1250 (B) 1290
(C) 1280 (D) 1150
(E) None of these

Q16 A person invested a certain sum in a scheme that offers a simple rate of interest at 6.25% p.a. and received Rs 72500 at the end of 4 years. Then he deposited 40% of the received amount in a scheme that offers a simple rate of interest at 8% p.a., and invested the remaining amount in another scheme offering compound rate of interest at 5% p.a. How much interest had he received at the end of six years from the beginning?

(A) 33598.75 (B) 29598.75
(C) 23598.75 (D) 25598.75
(E) None of these

Q17 Mahesh invested Rs 'a' in a bank offering 10% compound interest for three years. Dinesh invested Rs 2000 more than Mahesh in another bank offering 11% simple interest for three years. Find the value of 'a' if the interest earned by Dinesh is Rs 625 more than the interest earned by Mahesh.

(A) Rs 33000 (B) Rs 25000
(C) Rs 27000 (D) Rs 35000
(E) None of these

Q18 A man invested Rs.10000 in a scheme which offers 24% rate of interest annually and the amount he get after a certain period of time. If the amount he get after completion of the time is Rs.11236 and the interest calculated Quarterly, then find the time period.

(A) 8 month (B) 6 month
(C) 10 month (D) 5 month
(E) None of these

Q19 A man invests Rs.8000 for 2 years at 5% p.a. compound interest reckoned yearly. Income tax at the rate of 10% on the interest earned is deducted at the end of each year. Find the amount at the end of the second year.

(A) 6458.5 (B) 6498.5
(C) 4658.5 (D) 8736.2
(E) None of these

Q20

A gold bond with a face value of Rs.10000, bearing interest at 20% compounded semi-annually, was sold 12 months after its issue date and the bill was again purchased by the government after paying the final amount with interest. What amount was paid for the bill by the government.

(A) 12500 (B) 12800
(C) 12100 (D) 12200
(E) None of these

Level-3

Q1 Pritam deposited Rs. 'x' in bank A at 30% compound interest and Rs. 'x + 600' in bank B at 36% simple interest for 3 years. If interest earned by him from bank A was Rs. 1107 more than the interest earned by him from bank B, then find the value of 'x'.

(A) 15000 (B) 18000
(C) 16000 (D) 15400
(E) 12500

Q2 Rajat borrowed Rs. 84,000 from Dimple at 20% p.a. compound interest, compounded annually. At the end of the first year, he cleared a certain part of what he borrowed. At the end of the second year, he repaid thrice the amount which he repaid at the end of first year and cleared the entire loan. What is the amount paid at the end of the first year?

(A) Rs 24500 (B) Rs 28800
(C) Rs 30000 (D) Rs 32600
(E) None of these

Q3 The ratio of the sum invested in scheme 'A' for 4 years offering simple interest at the rate of 15% p.a. and the sum invested in scheme 'B' for 2 years offering compound interest, compounded annually at the rate of 50% p.a., is 4:5, respectively. The sum of the interest received from two schemes is Rs. _____. The amount received from scheme 'A' is Rs. _____.

The values given in which of the following options will fill the blanks in the same order in which is it given to make the statement true:

I. Rs. 1730, Rs. 1280
II. Rs. 4325, Rs. 3200
III. Rs. 1640, Rs. 1120

(A) Only I
(B) Only I and II
(C) Only III
(D) Only II and III
(E) Only II

Q4 Rachit invested Rs. 2450 each in two schemes 'A' and 'B' for _____ years and 2 years respectively. Scheme 'A' offers 24% p.a. simple interest while scheme 'B' offers _____% p.a. compound interest, compounded annually. The difference between the amounts received from two schemes is Rs. _____.

The values given in which of the following options will fill the blanks in the same order in which it is given to make the statement true:

I. 5, 10, 2425.5
II. 2, 40, 1196
III. 7, 20, 3038

(A) All I, II and III
(B) Only II
(C) Only I
(D) Only I and III
(E) None of these

Q5 Amount invested in scheme A is Rs. 1500 more than that invested in scheme B and simple interest received from scheme A after 5 years is Rs. 900 more than simple interest received from scheme B after 4 years. Rates of interest in schemes A and B are ___% and 15% respectively and difference between simple interest and compound interest received from scheme B after 2 years will be Rs. 67.5.

Find the value which will be filled in the blank?

(A) 10 (B) 5
(C) 15 (D) 20
(E) None of these

Q6 Ajit invested Rs. 20,000 in a scheme offering 10% compound interest compounded annually, whereas Sourav invested Rs. _____ more than the amount invested by Ajit in a scheme offering 11% simple interest. Difference between the interests earned by Ajit and Sourav after three years is Rs. _____.

The values given in which of the following options will fill the blanks in the same order in which is it given to make the above statement true:

I. 2000, 640
II. 1500, 450
III. 3000, 975
IV. 500, 145

(A) Only I
(B) Only I and II
(C) Only I, III and IV
(D) Only II, III and IV
(E) Only I and IV

Q7 A invest Rs. X in simple interest at the rate of R% p.a. for six-years and receives interest that is two times more than the amount he invested. If he had invested the same amount at the rate of (R-30)% compound annually for two years, then he receives an interest of Rs.2640.

If P invested Rs.60R in compound interest compound half yearly at the rate of $\frac{X}{300}$% p.a. for 1.5 years, then find the total amount received after 1.5 years

(in Rs.).

(A) Rs.3476 (B) Rs.3993
(C) Rs.3678 (D) Rs.5436
(E) Rs.5000

Q8 A invest Rs. X in simple interest at the rate of R% p.a. for six-years and receives interest that is two times more than the amount he invested. If he had invested the same amount at the rate of (R-30)% compound annually for two years, then he receives an interest of Rs.2640.

B purchased an article for Rs.(X-1500) and marked up R% above its cost price. If he allows a discount of (R-20)%, then find the profit/loss percentage.

(A) 5% (B) 6%
(C) 7% (D) 8%
(E) 10%

Q9 Nita borrows Rs x From Gita at 10% annual interest. She then adds Rs y of her own money and lends Rs (x+y) to Sita at 12% annual interest. At the end of the year after returning Gita's dues the net interest retained by Nita is the same as that accrued to Gita. on the other hand, had Nita lent Rs (x+2y) to Sita at 10% then the net interest retained by her would have increased by Rs. 200, and all interest are compounded annually. If Suresh invested Rs(x+y+z) at the rate of 20% p.a on compounded annually and he gets an amount of Rs.15552 after three years, then find the value of Z.

(A) 3000 (B) 2000
(C) 4000 (D) 5000
(E) None of these

Q10 Vikas invested a total sum of Rs. ___, in two schemes 'A' and 'B' such that he invested ___ more sum in scheme 'A', which offers simple interest at 30% p.a., than in scheme 'B', which offers compound interest (compounded annually) of 32% p.a. Total interest earned by him at the end of 2 years from given two schemes together, is Rs. ___.

The values given in which of the following options will fill the blanks in the same order in which it is given to make the statement true:

I. 22750, 27.5%, 15090.60
II. 19000, 37.5%, 12539.20
III. 24000, 40%, 15820.50
IV. 27000, 25%, 17908.80

(A) Only (II)
(B) Only (I) and (III)
(C) Only (II) and (IV)
(D) Only (II), (III) and (IV)
(E) None of these

Answer Key

Level-1

Q1	(B)	Q11	(B)
Q2	(B)	Q12	(A)
Q3	(B)	Q13	(C)
Q4	(B)	Q14	(E)
Q5	(A)	Q15	(C)
Q6	(A)	Q16	(A)
Q7	(C)	Q17	(E)
Q8	(A)	Q18	(B)
Q9	(A)	Q19	(B)
Q10	(A)	Q20	(C)

Level-2

Q1	(A)	Q11	(B)
Q2	(C)	Q12	(A)
Q3	(A)	Q13	(D)
Q4	(C)	Q14	(B)
Q5	(B)	Q15	(C)
Q6	(A)	Q16	(C)
Q7	(A)	Q17	(D)
Q8	(B)	Q18	(B)
Q9	(C)	Q19	(D)
Q10	(C)	Q20	(C)

Level-3

Q1	(A)	Q6	(E)
Q2	(B)	Q7	(B)
Q3	(B)	Q8	(A)
Q4	(D)	Q9	(C)
Q5	(E)	Q10	(C)

Hints & Solutions

Level-1

Q1 Text Solution:

Amount= $P[(1 + \frac{r}{100})^t]$

So;

P = Rs. 25000, r = 10 % per annum, t = 4 years.

Amount = $25000[(1 + \frac{10}{100})^4]$

$= 25000(\frac{11}{10})^4$

=36602.5

Q2 Text Solution:

A = $P(1 + \frac{r}{100})^t$

Where:

A = the maturity value of the investment

P = $Rs.\ 18000$

r = 8%, t = 2 years

Now;

A = $18000(1 + \frac{8}{100})^2$

A = $18000(1.08)^2$

A = $18000(1.1664)$

A = $Rs.\ 20,995.20$

Therefore, the maturity value of the investment after 2 years will be Rs. 20,995.20.

Q3 Text Solution:

$A = P(1 + r)^{\wedge}t$

Where:

P= the principal amount (Rs. 12000)

r = the annual interest rate (8%)

t = the number of years (2)

$A = 12000(1 + 0.08)^2$

$1 + 0.08 = 1.08$

$A = 12000(1.08)^2$

$A = 12000(1.166)$

$A = Rs.\ 13,996.8$

Therefore, the person will get Rs. 13,996.8 on maturity of the mutual fund.

Q4 Text Solution:

$Compound\ Interest = P[(1 + \frac{r}{100})^t - 1]$

So;

P = Rs 25000, r =20 % per annum, t = 2 years.

Compound interest = $25000[(1 + \frac{20}{100})^2 - 1]$

$= 25000[(\frac{6}{5})^2 - 1]$

$= 25000 \times \frac{11}{25}$

$= Rs\ 11000$

Q5 Text Solution:

$Compound\ Interest = P[(1 + \frac{r}{100})^t - 1]$

So;

P = Rs P, r =15 % per annum, t = 2 years.

Compound interest = $P[(1 + \frac{15}{100})^2 - 1]$

$=> 3225 = P[(\frac{23}{20})^2 - 1]$

$=> 3225 = \frac{129P}{400}$

$=> P = Rs\ 10000$

Q6 Text Solution:

$Compound\ Interest = P[(1 + \frac{r}{100})^t - 1]$

So;

P = Rs. 30,000, r = 10 % per annum, t = t years.

Compound interest = $30000[(1 + \frac{R}{100})^t - 1]$

$=> 9930 = 30000[(1 + \frac{10}{100})^t - 1]$

$=> \frac{9930}{30000} = (1 + \frac{10}{100})^t - 1$

$=> \frac{9930}{30000} + 1 = (\frac{11}{10})^t$

$=> \frac{39930}{30000} = (\frac{11}{10})^t$

$=> (\frac{11}{10})^3 = (\frac{11}{10})^t$

$=> t = 3\ years$

Q7 Text Solution:

$Compound\ Interest = P[(1 + \frac{r}{100})^t - 1]$

So;

P = Rs P, r = 5 % per annum, t = 3 years.

Compound interest = $P[(1 + \frac{5}{100})^3 - 1]$

$=> 3152.5 = P[(\frac{21}{20})^3 - 1]$

$=> 3152.5 = \frac{1261P}{8000}$

$=> P = Rs\ 20000$

Q8 Text Solution:

A = 40,000 + 10,625

⇒ P = Rs 50625

Here, A = 50625, P = 40,000, R = 12.5%, n = 1, t = ?

⇒ 50625 = 40000 $\times \left[1 + \left(\frac{12.5}{100}\right)\right]^t$

⇒ 50625/ 40000 = $(9/8)^t$

⇒ with trial and error method → 50625/40000 = $(9/8)^2$

⇒ t = 2

∴ In two years Arjun will get Rs. 10625 as compound interest

Q9 Text Solution:

P = Rs. 18,000, r = R % per annum, t = 2 years.

Compound interest $= 30000[(1+\frac{R}{100})^2-1]$

$=> 7920 = 30000[(1+\frac{R}{100})^2-1]$

$=> \frac{7920}{30000} = (1+\frac{R}{1000})^2-1$

$=> (\frac{44}{100})+1 = (1+\frac{R}{100})^2$

$=> (\frac{12}{10})^2 = (1+\frac{R}{100})^2$

$=> \frac{12}{10} = 1+\frac{R}{100}$

$=> \frac{1}{5} = \frac{R}{100}$

$=> R = 20\%$

Q10 Text Solution:

applying the formula

$\frac{3000}{61440} = \frac{3a+1}{a^3}$

$\frac{25}{512} = \frac{3a+1}{a^3}$

bycomparing both sides

$a^3 = 512$

$a = 8$

Rate of intrest=$\frac{1}{a} \times 100 = \frac{1}{8} \times 100$

=12.5%

Q11 Text Solution:

A = P$\left(1+\frac{R}{100}\right)^T$

Let the principal be x

Amount which Shraddha gets after five years = 3/2 times of its principal

Amount = 3x/2

⇒ 3x/2 = x$\left(1+\frac{R}{100}\right)^5$

⇒ 3/2 =$\left(1+\frac{R}{100}\right)^5$ ----(1)

She will gain 81/16 times

So, New amount = 81x/16

⇒ 81x/16 = x$\left(1+\frac{R}{100}\right)^T$

⇒ 81/16 =$\left(1+\frac{R}{100}\right)^T$

⇒ $\left(\frac{3}{2}\right)^4$=$\left(1+\frac{R}{100}\right)^T$

From equation (1)

⇒$\left\{\left(1+\frac{R}{100}\right)^5\right\}^4 = \left(1+\frac{R}{100}\right)^T$

⇒$\left(1+\frac{R}{100}\right)^{20} = \left(1+\frac{R}{100}\right)^T$ ----(2)

Compare both the side of equation (2)

⇒ T = 20 years

∴ Required Time 20 years

Q12 Text Solution:

Deposit amount = 200

Using formulae,

$p\left(1+\frac{R}{100}\right)^4$ = 2P

$\left(\frac{1+R}{100}\right)^4$ = 2 .....(i)

After 20 years,

$\left(\frac{1+R}{100}\right)^{20} = \left[\left(1+\frac{R}{100}\right)^4\right]^5$

$= 2^5 = 32$

Thus , the amount becomes 32 times

So, amount = 200 × 32

=6400.

Q13 Text Solution:

$Amount = P[(1+\frac{r}{100})^t]$

So;

P = Rs P, r =5 % per annum, t = 2 years.

Amount= $P[(1+\frac{5}{100})^2]$

$=> 22050 = P[(\frac{21}{20})^2]$

$=> 22050 = \frac{441P}{400}$

$=> P = 20000$

Therefore;

Compound Interest = Amount - Principal

$= 22050 - 20000$

$= Rs\ 2050$

Q14 Text Solution:

intrest rate=$\frac{540}{2700} \times 100 = 20\%$

let principal be Rs x

x$\left(1+\frac{20}{100}\right)^2 = 2700$

36x/25 = 2700

x=1875

Q15 Text Solution:

Let the sum of money is Rs.P

S.I. = $\frac{P\times r\times t}{100}$ = $\frac{P\times 10\times 2}{100}$

P=Rs.500

Compounded amount = 500$\left(\frac{11}{10}\right)^2$

=500×$\left(\frac{11}{10}\right)^2$=500×$\frac{121}{100}$=Rs.605

Compound interest = 605-500=Rs.105

Q16 Text Solution:

$Compound\ Interest + Principal$

$= P[(1+\frac{r}{100})^t]$

So;

P = Rs 10000x, r =5 % per annum, t = x years.

As per question;

$10000x + 2050 = 10000x[(1 + \frac{5}{100})^x]$

$10000x+2050=10000x\left[\left(\frac{21}{20}\right)^x\right]$

Form here, we know that value of x can be either 1 or 2

Putting the value of x = 1 will not satisfy the above equation, so the value of x should be 2.

Now, the value of x =2 , so we the time period is 2 years and the principal $= 10000 \times 2 = 20000$

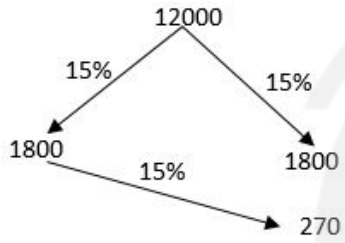
Amount = $20000[(1 + \frac{5}{100})^2]$

= $20000\times\frac{105\times105}{100\times100}$ = 22050

Q17 Text Solution:

20% of 40 = 8

Rate = x + 7 = 8 + 7 = 15%



CI = 1800 +1800 + 270 =Rs 3870

Q18 Text Solution:

Compound interest for Rs 15000 at 20% CI for 3 years will be = $P\left(1 + \frac{R}{100}\right)^T - P$

$\Rightarrow 15000 \times \left(1 + \frac{20}{100}\right)^3 - 15000 = 10920$

Compound interest for Rs 15000 at 25% CI for 2 years will be =

$\Rightarrow 15000 \times \left(1 + \frac{25}{100}\right)^2 - 15000 = 8437.5$

∴ Difference = 10920 − 8437.5 = Rs. 2482.5

Q19 Text Solution:

Amount compounded half yearly;

$A = P[(1 + \frac{r}{2\times100})^{2t}]$

So;

$P = Rs.\ 20000,\ r = 40\%$ per annum, t = t years

$A = P[(1 + \frac{40}{2\times100})^{2t}]$

$=>34560 = 20000[(1.2)^{2t}]$

$=>1.728 = 1.2^{2t}$

$=> (1.2)^3 = 1.2^{2t}$

$=> 2t = 3$

$=> t = 1.5\ years$

Q20 Text Solution:

Given, Principal Amount (P) = ₹ 6000

Rate of Interest per annum(R) = 5% per annum

Time in years(T) = 2 years

As we know formula of Simple interest,

$s=\frac{P\times R\times T}{100} = \frac{6000\times5\times2}{100} = 600$

Now, Compound interest

P = ₹ 5000 at 8% p.a.

$A = P(1 + \frac{R}{100})^2$

$A = 5000(1 + \frac{8}{100})^2$

$= 5000(\frac{108}{100})^2 \Rightarrow ₹\ 5832$

CI=5832-5000=832

Difference between of their interests will be $= 832 - 600 = ₹\ 232$

Level-2

Q1 Text Solution:

Let Monu's share be x and Sonu's share be $(10000 - x)$.

$A = P(1 + \frac{R}{100})^n$

$x(1 + \frac{10}{100})^5 = (10000 - x)(1 + \frac{10}{100})^7$

$x = (10000 - x)(1.21)$

$x = 12100 - 1.21x$

$2.21x = 12100$

$x = 5475$

Q2 Text Solution:

Compound interest for two years = x + y + (xy)/100

= 10 + 10 + (10 × 10)/100 = 21%

Amount = (100 + 21)% = 121% = 5808

Sum = 5808/121 × 100 = 4800

P = 4800

SI = (P × N × R)/100

2880 = 4800 × R × 4/100

R = 15%

Q3 Text Solution:

Compound interest compounded half yearly;

CI $= P[(1 + \frac{r}{2\times100})^{2t} - 1]$

So;

P $= Rs.\ 10,000,\ r = 10\%$ per annum, t $= 1\ year.$

CI $= 10,000[(1 + \frac{10}{2\times100})^2 - 1]$

CI $= 10,000[(1.05)^2 - 1]$

CI $= 10000 \times 0.1025 = 1025$

Q4 Text Solution:

Simple interest rate for 2 years $= 2 \times 40 = 80\%$

Compound interest rate for 2 years $= 40 + 40 + \frac{40\times40}{100} = 80 + 16 = 96\%$

Di erence between simple interest and compound interest for 2 years = $(96 - 80)\%\ of\ P$

$(96 - 80)\%\ of\ P = 1020$

16% of P =1020

P = Rs 6375

Simple interest on Rs 6375 at the rate of 15% per annum for 2 years = $\frac{6375\times15\times2}{100} = Rs\ 1912.50$

Q5 Text Solution:

Two-year compound interest rate when the rate of interest is 10% $= 10 + 10 + \frac{10\times10}{100} = 21\%$

Two-year compound interest rate when the rate of interest is 12%= $12 + 12 + \frac{12\times12}{100} = 25.44\%$

21% of P + 25.44% of $(P - 4000) = 6412.8$

46.44% of P - 1017.6 = 6412.8

46.44% of P = 7430.4

P = $\frac{7430.4}{46.44} \times 100 = 16000$

Amount invested by Y = 16000 - 4000 = Rs 12000

Q6 Text Solution:

Sum borrowed = Rs 18200

Interest = 10%, time = 2 years

Let each installment be Rs x.

AS per question;

$18200(1 + \frac{20}{100})^3 = x(1 + \frac{20}{100})^2 + x(1 + \frac{20}{100}) + x$

$18200(1.2)^3 = 1.44x + 1.2x + x$

$31449.6 = 3.64x$

$x = 8640$

Q7 Text Solution:

At CI;

$A = P(1 + \frac{r}{100})^2$

$A = 10000(1 + \frac{10}{100})^2$

$A = 10000(1.21) = 12100$

At SI;

$A = P[1 + \frac{rt}{100}]$

$A = 10000[1 + \frac{10(2)}{100}] = 12000$

Therefore; lose of A would be $12100 - 12000 = 100$

Q8 Text Solution:

SI = principal × rate × time / 100

S.I. = P × 12 × 5 / 100 = 3P / 5

CI = P $\left(1 + \frac{r}{100}\right)^n$ - P

CI = 4000$\left(1+\frac{10}{100}\right)^2$ - 4000 = 4840 - 4000 = 840

Given, 3P / 5 = 2(840)

P = 2800

Q9 Text Solution:

$6800=\frac{x}{\left(1+\frac{1}{8}\right)}+\frac{x}{\left(1+\frac{1}{8}\right)^2}$

$\Rightarrow x\left(\frac{8}{9}+\frac{64}{81}\right)=6800 \Longrightarrow x=\frac{(6800\times 81)}{136}$

$=4050$

Q10 Text Solution:

Compound interest compounded quarterly;

CI $= P[(1+\frac{r}{4\times 100})^{4t}-1]$

So;

P $= Rs.\ 10,000,\ r = 20\%$ per annum, t $= 0.5\ year.$

CI $= 10,000[(1+\frac{20}{4\times 100})^{4(0.5)}-1]$

CI $= 10,000[(1.05)^2-1]$

CI $= 10000\times 0.1025 = 1025$

Q11 Text Solution:

Two-year compound interest rate $= 12+12+\frac{12\times 12}{100} = 24+1.44 = 25.44\%$

Three years simple interest rate = $12\times 3 = 36\%$

$(36-25.44)\%$ of Principle amount = 4224

10.56% of Principle amount = 4224

Principle amount = $\frac{4224}{10.56}\times 100$ = Rs 40000

Two years of compound interest rates when the rate is 10% per annum = $10+10+\frac{10\times 10}{100} = 21\%$

Required compound interest = 21% of 80000 = Rs 16800

Q12 Text Solution:

Sum borrowed = Rs 51000

Interest = 4%, time = 2 years

Let the amount paid at the end of two years be Rs x.

$=> 51000(1+\frac{4}{100})^2 = x(1+\frac{4}{100})+x$

$=> 51000(1.04)^2 = 1.04x+x$

$=> 55161.6 = 2.04x$

$=> x = 27040$

Q13 Text Solution:

Sum borrowed = Rs 2550

Interest = 8%, time = 1 years

Let the amount of installment paid at the end of 1 year be Rs x.

As per question;

$2550(1+\frac{8}{2\times 100})^2 = x(1+\frac{8}{2\times 100})+x$

$=> 2550(1.04)^2 = 1.04x+x$

$=> 2758.08 = 2.04x$

$=> x = 1352$

Q14 Text Solution:

$A = P+(\frac{40}{100})\times P = 1.4P$

In this case, P = Rs. 10000, r = 7%, and t = 2. So, we have:

A = $10000\times(1+\frac{7}{100})^2$

A = 10000×1.07^2

A = $Rs.\ 11449$

Now, interest earned at the end of the first year;

$I_1 = P\times\frac{r}{100} = 10000\times\frac{7}{100} = Rs.\ 700$

income tax deducted on this interest is:

$T_1 = 5\%\ of\ I_1 = \frac{5}{100}\times 700 = Rs.\ 35$

So, the amount left after deducting income tax at the end of the first year is:

$A_1 = P+I_1-T_1 = 10000+700-35 = Rs.\ 10665$

The interest earned at the end of the second year is:

$I_2 = A_1\times\frac{r}{100} = 10665\times\frac{7}{100} = Rs.\ 746.55$

The income tax deducted on this interest is:

$T_2 = 5\%\ of\ I_2 = \frac{5}{100}\times 746.55 = Rs.\ 37.33$

So, the amount left after deducting income tax at the end of the second year is:

$A_2 = 10665+746.55-37.33 = Rs.\ 11374.22$

Q15 Text Solution:

Let Sum borrowed = Rs x

Interest = 10%, time = 2 years

Each Installment = Rs 4840

Total installment paid = $2(4840) = Rs\ 9680$

As per question;

$x = \frac{4840}{1+\frac{10}{100}} + \frac{4840}{[1+\frac{10}{100}]^2}$

$=> x = \frac{4840}{1.1} + \frac{4840}{1.21}$

$=> x = 4400 + 4000$

$=> x = 8400$

Interest charged on sum = (9680-8400) = Rs.1280

Q16 Text Solution:

Let the person invest Rs P in the beginning.

According to the question,

P + $\frac{p\times6.25\times4}{100}$ = 72500

P = $\frac{72500\times4}{5}$ = Rs 58000

Interest received for the first 4 years = 72500 – 58000 = Rs 14500

Amount invested at 8% simple interest = 72500 × $\frac{40}{100}$ = Rs 29000

Time = 2 years

Interest received = $\frac{29000\times8\times2}{100}$ = Rs 4640

Amount invested at 5% compound interest = 72500 – 29000 = Rs 43500

Time = 2 years

Interest received = P $(1+\frac{5}{00})^2$ – P

= 43500 $(\frac{21}{20})^2$ – 43500

= 47958.75 – 43500 = Rs 4458.75

Total interest received = 14500 + 4640 + 4458.75 = Rs 23598.75

Option '23598.75' is the correct answer.

Q17 Text Solution:

Applying the compound interest and simple interest formulae in the following equations, we get

Interest earned by Mahesh = a × $[(1 + 0.10)^3 – 1]$ = Rs. 0.331a

Interest earned by Dinesh = (a + 2000) × 0.11 × 3 = Rs. 0.33a + 660

Using the data provided in the question, we get

0.33a + 660 – 0.331a = 625

0.001a = 35

a = 35000

So, the value of a = Rs 35000

Q18 Text Solution:

Amount received after compounding quarterly;

A $= P[(1 + \frac{r}{4\times100})^{4t}]$

So;

P = $Rs.\ 10000,\ r = 24\%$ per annum,

t = $t\ years.$

A = $10000[(1 + \frac{24}{4\times100})^{4t}]$

=>11236 = $10000[(1.06)^{4t}]$

=>$1.1236 = 1.06^{4t}$

=>$1.06^2 = 1.06^{4t}$

$=> 4t = 2$

$=> t = 0.5 = 6\ months$

Q19 Text Solution:

CI earned by the man for 2 years at 5% p.a. compounded yearly.

$A = P \times (1 + \frac{R}{100})^t$

$A = 8000 \times (1 + \frac{5}{100})^2$

$A = 8820$

So,the amount at the end of 2 years before deduction of income tax is Rs. 8820.

$I_1 = P \times (\frac{R}{100}) = 8000 \times (\frac{5}{100}) = 400$

The income tax deducted on this interest at the rate of 10% is:

$IT_1 = I_1 \times (\frac{10}{100}) = 40$

So, the net interest earned at the end of the first year is:

$NI_1 = I_1 - IT_1 = 360$

The amount at the end of the first year is:

$A_1 = P + NI_1 = 8000 + 360 = 8360$

The interest earned at the end of the second year is:

$I_2 = A1 \times (\frac{R}{100}) = 8360 \times (\frac{5}{100})$

$= 418$

The income tax deducted on this interest at the rate of 10% is:

$IT_2 = I_2 \times (\frac{10}{100}) = 41.8\ (approx)$

So, the net interest earned at the end of the second year is:

$NI_2 = I_2 - IT_2 = 376.2\ (approx)$

Therefore, the amount at the end of the second year after deduction of income tax is:

$A_2 = A_1 + NI_2 = 8360 + 376.2$

$= 8736.2$

Hence, the amount at the end of the second year after deduction of income tax is

$Rs.\ 8736.2\ (approx)$

Q20 **Text Solution:**

Since, the bond is compounded semi- annually,

So; t= 1 year, r = 20 %

Amount $= P\{(1 + \frac{r}{2\times100})^{2t}\}$

$= 10000\{(1 + \frac{20}{2} \times 100)^2\}$

$= 10000(\frac{11}{10})^2$

$= Rs\ 12100$

Level-3

Q1 Text Solution:

Interest earned by him from Bank A = x × {$(1.3)^3$ – 1} = Rs. 1.197x

Interest earned by him from Bank B $= \frac{(x+600)\times 36\times 3}{100} = Rs.\ 1.08x + 648$

According to the data provided in the question, we get

1.197x – 1.08x – 648 = 1107

0.117x = 1755

x = 15000

Q2 Text Solution:

Amount accrued at the end of the first year $= 84,000\ \left(1+\frac{20}{100}\right) = 1,00,800$

Let the amount paid by Rajat at the end of the first year = x

According to the question,

$\left(1,00,800-x\right) \times \frac{120}{100} = 3x$

$\Rightarrow 1,00,800 - x = 2.5x$

$\Rightarrow x = Rs.\ 28,800$

Q3 Text Solution:

Let the sum invested in scheme 'A' and 'B' be Rs. 4x and Rs. 5x, respectively.

Therefore, Interest received from scheme 'A' = (4x × 4 × 15)/100 = Rs. 2.4x

Interest received from scheme 'B' = 5x$(1+\frac{50}{100})^2$ – 5x = Rs. 6.25x

Total interest received from two schemes = 2.4x + 6.25x = Rs. 8.65x

Amount received from scheme 'A' = 4x + 2.4x = Rs. 6.4x

For I:

According to the question,

8.65x = 1730

Or, x = 1730÷8.65 = 200

Therefore, 6.4x = Rs. 1280

Therefore, I is true.

For II:

8.65x = 4325

Or, x = 4325 ÷ 8.65 = 500

Therefore, 6.4x = Rs. 3200

Therefore, II is true

For III:

8.65x = 1640

Or, x = 1640 ÷ 8.65 = 189.59

Therefore, 6.4x = Rs. 1213

Therefore, III is false.

Hence, option b.

Q4 Text Solution:

For I:

Amount received from scheme 'A' = (2450 × 24 × 5)÷100 + 2450 = Rs. 5390

Amount received from scheme 'B' = 2450(1 + $\frac{10}{100}$)^2 = Rs. 2964.5

Required difference = 5390 – 2964.5 = Rs. 2425.5

Therefore, I is true.

For II:

Amount received from scheme 'A' = (2450 × 24 × 2)÷100 + 2450 = Rs. 3626

Amount received from scheme 'B' = 2450(1 + $\frac{40}{100}$)^2 = Rs. 4802

Required difference = 4802 – 3626 = Rs. 1176

Therefore, II is false.

For III:

Amount received from scheme 'A' = (2450 × 24 × 7)÷100 + 2450 = Rs. 6566

Amount received from scheme 'B' = 2450(1 + $\frac{20}{100}$)^2 = Rs. 3528

Required difference = 6566 – 3528 = Rs. 3038

Therefore, III is true.

Hence, option d.

Q5 Text Solution:

Let the amount invested in scheme B = Rs. 'P'

So, the amount invested in scheme A = Rs. (P + 1500)

Since, rate of interest in scheme B = 15%

And difference between CI and SI received from scheme B after 2 years will be Rs.67.5.

So,

67.5 = P × $\left(\frac{15}{100}\right)^2$

P = 3000

Amount invested in scheme A = 3000 + 1500 = Rs.4500

Amount invested in scheme B = 3000

Since, SI received from scheme A after 5 years is Rs.900 more than SI received from scheme B after 4 years.

Let rate of interest in scheme A = R%

$\left[\frac{4500 \times R \times 5}{100}\right] - \left[\frac{3000 \times 15 \times 4}{100}\right]$ = 900

225R = 2700

R = 12%

Q6 Text Solution:

Interest earned by Ajit after three years = 20000 × $\{(1 + 0.10)^2 - 1\}$ = 20000 × 0.331 = Rs. 6,620

Option I:

Amount invested by Sourav = 20000 + 2000 = Rs. 22,000

Interest earned by Sourav after three years = 22000 × 0.11 × 3 = Rs. 7260

Difference between the interests earned by Ajit and Sourav = 7260 – 6620 = Rs. 640

So option I can be the answer.

Option II:

Amount invested by Sourav = 20000 + 1500 = Rs. 21,500

Interest earned by Sourav after three years = 21500 × 0.11 × 3 = Rs. 7095

Difference between the interests earned by Ajit and Sourav = 7095 – 6620 = Rs. 475

So option II can't be the answer.

Option III:

Amount invested by Sourav = 20000 + 3000 = Rs. 23,000

Interest earned by Sourav after three years = 23000 × 0.11 × 3 = Rs. 7590

Difference between the interests earned by Ajit and Sourav = 7590 – 6620 = Rs. 970

So option III can't be the answer.

Option IV:

Amount invested by Sourav = 20000 + 500 = Rs. 20,500

Interest earned by Sourav after three years = 20500 × 0.11 × 3 = Rs. 6765

Difference between the interests earned by Ajit and Sourav = 6765 – 6620 = Rs. 145

So option IV can be the answer.

Hence, option e.

Q7 Text Solution:

According to question,

$3X = \frac{X \times R \times 6}{100}$

R = 50

And composite compound interest = (R – 30)% = (50 – 30)% = 20%

= 20 + 20 +$(20 \times \frac{20}{100})$ = 44%

$X \times \frac{44}{100}$ = 2640

X = 6000

Investment of P = Rs.(60 ×50) = Rs.3000

Rate of interest = $\frac{6000}{300}$ = 20%

According to question,

Amount = $3000\left(1 + \frac{20}{2\times100}\right)^3$

= $3000 \times \left(\frac{11}{10}\right)^3$

= Rs. 3993

Q8 Text Solution:

According to question,

$3X = \frac{x \times R \times 6}{100}$

R = 50

And compound interest (R – 30)% = (50 – 30)% = 20%

= 20 + 20 + $(20 \times \frac{20}{100})$ = 44%

$X \times \frac{44}{100}$ = 2640

X = 6000

Cost price = 6000 – 1500 = Rs.4500

Marked price = $4500 \times \frac{150}{100}$ = Rs.6750

Selling price = $6750 \times \frac{70}{100}$ = Rs.4725

Profit% = $\frac{4725 - 4500}{4500} \times 100$ = 5%

Q9 Text Solution:

Interest of Gita = 10% of x

Interest of Nita = 12% of (x + y) – 10% of x

⇒ 12% of x + 12% of y – 10% of x = 10% of x

⇒ 12% of y = 8% of x

⇒ x/y = 12/8 = 3/2

Now,

Given that,

If Nita lent Rs (x+2y) to Sita at 10% then the net interest retained by her would have increased

by Rs. 200
That means 10% = 200
∴ 100% = 2000
That means y = 2000
From the ratio between x and y, we can find the value of x.
⇒ x/y = 3/2
⇒ x/2000 = 3/2
⇒ x = 3000
Now,
Given that,
If Suresh invested Rs(x+y+z) at the rate of 20% p.a on compounded annually and he gets an amount of Rs.15552 after three years
As we know,
There is a 72.8% increase in the amount in 3 years at a compound interest of 20%, compounded annually.
∴ If 172.8 % = 15552
Then 100% = 9000
Now,
⇒ x+y+z = 9000
⇒ 2000 + 3000 + z = 9000
⇒ z = 9000 – 5000 = 4000
⇒ z = 4000
Therefore, the value of z is 4000.
Ans: option (C)

Q10 Text Solution:
For 'I':
Sum invested in scheme 'A' = {22750 × (127.5÷227.5)} = Rs. 12,750
Sum invested in scheme 'B' = (22750 - 12750) = Rs. 10,000
Simple interest earned = {(12750 × 30 × 2)÷100} = Rs. 7,650
Compound interest earned = 10000 × [1 + ($\frac{32}{100}$)}^{2} - 1]= {10000 × (464÷625}) = Rs. 7,424
Total interest earned = (7650 + 7424) = Rs. 15,074
So, 'I' is false.
For 'II' -
Sum invested in scheme 'A' = {19000 × (137.5÷237.5)} = Rs. 11,000
Sum invested in scheme 'B' = (19000 - 11000) = Rs. 8,000
Simple interest earned = {(11000 × 30 × 2)÷100} = Rs. 6,600
Compound interest earned = 8000 × [1 + ($\frac{32}{100}$)}^{2} - 1]= {8000 × (464÷625}) = Rs. 5,939.2
Total interest earned = (6600 + 5939.2) = Rs. 12,539.2
So, 'II' is true.
For 'III':
Sum invested in scheme 'A' = {24000 × (140÷240)} = Rs. 14,000
Sum invested in scheme 'B' = (24000 - 14000) = Rs. 10,000
Simple interest earned = {(14000 × 30 × 2)÷100} = Rs. 8,400
Compound interest earned = 10000 × [1 + ($\frac{32}{100}$)}^{2} - 1]= {10000 × (464÷625}) = Rs. 7,424
Total interest earned = (8400 + 7424) = Rs. 15,824
So, 'III' is false.
For 'IV':
Sum invested in scheme 'A' = {27000 × (125÷225)} = Rs. 15,000
Sum invested in scheme 'B' = (22750 - 15000) = Rs. 12,000
Simple interest earned = {(15000 × 30 × 2)÷100} = Rs. 9,000
Compound interest earned = 12000 × [1 + ($\frac{32}{100}$)}^{2} - 1] = {12000 × (464÷625}) = Rs. 8,908.8
Total interest earned = (9000 + 8908.8) = Rs. 17,908.8
So, 'IV' is true.
Hence, option C.