3 CHAPTER

SIMPLE INTEREST & COMPOUND INTEREST

1. Find the simple interest on Rs. 4800 at the rate of $8\frac{1}{2}\%$ per annum for a period of 2 years 3 months.

(a) Rs. 796 (b) Rs. 816

(c) Rs. 918 (d) Rs. 990

[RRB JE 2014 RED SHIFT]

2. Simple Interest on Rs. 500 for 4 years at 6.25% per annum is equal to the Simple Interest on Rs.400 at 5% per annum for a certain period of time. The period of time is

(a) 4 years (b) 5 years

(c) $6\frac{1}{4}$ years (d) $8\frac{2}{3}$ years

[RRB JE 2014 YELLOW SHIFT]

3. A sum becomes Rs. 2916 in 2 years at 8% per annum compound interest. The sum is

(a) Rs. 2750 (b) Rs. 2500

(c) Rs. 2625 (d) Rs. 2560

[RRB JE 2014 YELLOW SHIFT]

4. If ₹200 becomes ₹240 in 4 years, then the rate of simple interest per annum is

(a) $\frac{25}{6}\%$ (b) $\frac{25}{3}\%$

(c) $\frac{25}{2}\%$ (d) 5%

[RRB JE 2015 26th AUG 1st SHIFT]

5. A sum of money doubles itself in 5 years when the interest is compounded annually. The number of years when it will become eight times is

(a) 10 (b) 12

(c) 15 (d) 20

[RRB JE 2015 26th AUG 1st SHIFT]

6. The simple interest on rupees 200 for 3 years at 6% per annum in rupees is

(a) 36 (b) 18

(c) 24 (d) 48

[RRB JE 2015 26th AUG 2nd SHIFT]

7. A sum of money doubles itself in 4 years when the interests is compounded annually. The number of years when it will become eight times is

(a) 32 (b) 16

(c) 12 (d) 8

[RRB JE 2015 26th AUG 2nd SHIFT]

8. The simple interest on rupees 800 for 7 years at 5% per annum is

(a) ₹100 (b) ₹125

(c) ₹150 (d) ₹200

[RRB JE 2015 26th AUG 3rd SHIFT]

9. The compound interest on rupees 12000 for 1 year at 10% per annum compounded half yearly is

(a) ₹1200 (b) ₹1230

(c) ₹2520 (d) ₹2680

[RRB JE 2015 26th AUG 3rd SHIFT]

10. The simple interest on rupees 800 for 3 years at 5% per annum in rupees is

(a) 24 (b) 40

(c) 120 (d) 140

[RRB JE 2015 27th AUG 1st SHIFT]

11. Compound interest on rupees 8000 for 1 year at 10% per annum compounded half yearly is

(a) 800 (b) 1680

(c) 840 (d) 820

[RRB JE 2015 27th AUG 1st SHIFT]

12. In how many years rupees 500 will amount to rupees 800 at simple interest of 10% per year?

(a) 6 (b) 8

(c) 10 (d) 16

[RRB JE 2015 27th AUG 2nd SHIFT]

13. Compound interest ₹16000 for 1 year at 10% per annum compounded half yearly is

(a) 1600

(b) 1640

(c) 1680

(d) 3360 **[RRB JE 2015 27th AUG 2nd SHIFT]**

14. In how many years ₹500 will amount to ₹700 at simple interest of 5% per annum?

(a) 4 (b) 5

(c) 6 (d) 8

[RRB JE 2015 27th AUG 3rd SHIFT]

15. In how many years ₹2000 will amount to ₹2100 at 10% per annum compounded half yearly?

(a) 2 (b) 1.5

(c) 1 (d) 0.5

[RRB JE 2015 27th AUG 3rd SHIFT]

16. If ₹500 amounts to Rs. 700 in 8 years, the rate of simple interest is

(a) 5% (b) 6%

(c) 8% (d) 10%

[RRB JE 2015 28th AUG 1st SHIFT]

17. The compound interest on ₹10,000 for 1 year at the rate of 8% per annum compounded half yearly is

(a) ₹800 (b) ₹816

(c) ₹856 (d) ₹958

[RRB JE 2015 28th AUG 1st SHIFT]

18. The simple interest on ₹300 for 3.5 years, at 6% per annum is

(a) ₹45 (b) ₹50

(c) ₹53 (d) ₹63

[RRB JE 2015 28th AUG 2nd SHIFT]

19. Compound interest on ₹1000 for 3 year, compound annually at 10% per annum is

(a) ₹331 (b) ₹300

(c) ₹1300 (d) ₹1331

[RRB JE 2015 28th AUG 2nd SHIFT]

20. The simple interest on ₹720 for years at 6% per annum is

(a) ₹216 (b) ₹232

(c) ₹250 (d) ₹300

[RRB JE 2015 28th AUG 3rd SHIFT]

21. The Compound interest on ₹8000 for $\frac{3}{2}$ years at 20% per annum compounded half yearly is

(a) ₹10648 (b) ₹3648

(c) ₹2648 (d) ₹2400

[RRB JE 2015 28th AUG 3rd SHIFT]

22. A loan has to be returned in two equal annual installments. If the rate of interest is 16% per annum compounded annually and each installment is of Rs 3364, then the loan is of Rs

(a) Rs 5328 (b) Rs 5400

(c) Rs 5700 (d) Rs 6728

[RRB JE 2015 29th AUG 1st SHIFT]

23. Simple interest on a certain sum is $\frac{1}{16}$ of the principal. If the numbers representing the rate of interest in percent per annum and time in years be equal, then the rate of interest is

(a) 2.5 (b) 3

(c) 3.5 (d) 4

[RRB JE 2015 29th AUG 1st SHIFT]

24. A loan of Rs.25500 is to be paid back in two equal annual instalments. If the rate of interest charged is 4% per annum, compounded annually. Then each instalment will be of Rs.

(a) 12750 (b) 13250

(c) 13320 (d) 13520

[RRB JE 2015 29th AUG 2nd SHIFT]

25. A sum of Rs.20000 is lent partly at 8% and remaining at 10% per annum. If the average yearly rate of interest is 9.4%, then the sum lent at 10% is

(a) Rs. 6000 (b) Rs. 8000

(c) Rs. 12000 (d) Rs. 14000

[RRB JE 2015 29th AUG 2nd SHIFT]

26. A sum of Rs. 61800 is to be paid back in two equal annual instalments. How much is each instalment, if the rate charged is 6% per annum, compounded annually?

(a) Rs. 30900 (b) Rs. 31800

(c) Rs. 32908 (d) Rs. 33708

[RRB JE 2015 29th AUG 3rd SHIFT]

27. Two equal sums are lent at the same time at 6% and 5% simple interest respectively. The first is received 2 years earlier than the second, and the amount in each case is Rs. 4800. Each sum is of Rs.

(a) 2000 (b) 2500

(c) 3000 (d) 4000

[RRB JE 2015 29th AUG 3rd SHIFT]

28. What will be the simple interest of Rs. 700 at 9% per annum for the period from February 5, 1994 to April 18, 1994

(a) Rs. 12.60 (b) Rs. 11.30

(c) Rs. 15 (d) Rs. 13

[RRB JE 2015 30th AUG 3rd SHIFT]

29. What will be difference between simple interest and compound interest @ 10% per annum on a sum of Rs. 1000 after 4 years

(a) Rs. 31 (b) Rs. 32.10

(c) Rs 40.40 (d) Rs. 64.10

[RRB JE 2015 30th AUG 3rd SHIFT]

30. A man invested 1/3 of his capital at 7 %. 1/4 at 8% and the remainder at 10%. If the annual income is Rs. 561. the capital is

(a) 4400 (b) 5500

(c) 6600 (d) 5800

[RRB JE 2015 16th SEP 3rd SHIFT]

31. A lends Rs. 2500 to B and a certain sum to C at the same time at 7% per annum simple interest. If after 4 years . A altogether receives Rs. 1120 as interest from B and C, then the sum lent to C is

(a) Rs. 700 (b) Rs. 1500

(c) Rs. 4000 (d) Rs. 6500

[RRB JE 2015 16th SEP 3rd SHIFT]

ANSWERS

1. (c)	**2.** (c)	**3.** (b)	**4.** (d)	**5.** (c)	**6.** (a)	**7.** (c)	**8.** (a)	**9.** (b)	**10.** (c)
11. (*)	**12.** (a)	**13.** (b)	**14.** (d)	**15.** (d)	**16.** (a)	**17.** (b)	**18.** (d)	**19.** (a)	**20.** (a)
21. (c)	**22.** (b)	**23.** (a)	**24.** (d)	**25.** (d)	**26.** (d)	**27.** (c)	**28.** (a)	**29.** (d)	**30.** (c)
31. (b)									

EXPLANATIONS

1. $SI = \frac{4800 \times 8.S \times 2.2S}{100}$ = Rs. 918

2. $500 \times 4 \times 6.25\% = 400 \times 5 \times t$

$\Rightarrow t = 6.25$ years

3. Let the required sum be Rs. x.

$\Rightarrow x \times \frac{108}{100} \times \frac{108}{100} = 2916$

$\Rightarrow x$ = Rs. 2500

4. Given that Rs. 200 becomes Rs. 240 in 4 years, thus it would have become Rs. 210 at the end of first year.

Hence, rate of simple interest = $\frac{10}{200} \times 100 =$ 5%.

5. The money gets doubled in 5 years which means it becomes twice of itself after every 5 years. Hence, it will be increased to 4 times in 10 years and 8 times in 15 years.

6. $S.I = \frac{200 \times 30 \times 6}{100}$ = Rs.36

7. If the money gets doubled in 4 years then it will become 5 times in 8 years and 8 times in 12 years.

8. Simple interest = $\frac{PRT}{100}$

$= 800 \times \frac{5}{100} \times \frac{5}{2} = 100$

9. Compound interest for $\frac{1}{2}$ year = $\frac{PRT}{100}$

$= 12000 \times \frac{10}{100} \times \frac{1}{2}$

$= 600$

CI for next $\frac{1}{2}$ year $= 600 + 600 \times \frac{10}{100} \times \frac{1}{2}$

$= 630$

$\therefore$ Total CL = 600 + 630

= Rs. 1230

10. $SI = \frac{PRT}{100}$

$\Rightarrow SI = 800 \times \frac{5}{100} \times 3 = 120$

11. $CI = P\left(1 + \frac{\frac{r}{2}}{100}\right)^{T \times 2} - P$

$$\Rightarrow CI = 8000\left(1+\frac{\frac{10}{2}}{100}\right)^{1\times2} - 8000$$

$= 820$

This is given in option 4.

12. Simple interest = Amount – Principle

$= 800 - 500 = 300$

$$SI = \frac{PRT}{100} \Rightarrow 300 = 500 \times \frac{10}{100} \times T$$

$\Rightarrow T = 6$ years

13. CI for first $\frac{1}{2}$ year

$$= \frac{PRT}{100} = 16000 \times \frac{1}{10} \times \frac{1}{2} = 800$$

CI for 2nd $\frac{1}{2}$ year

$$= 800 + 800 \times \frac{1}{10} \times \frac{1}{2} = 840$$

$\therefore$ Total I = 800 + 840 = 1640

14. P = Rs. 500

A = Rs. 700

$$\Rightarrow \text{Interest} = 200 = \frac{500 \times 5 \times T}{100}$$

$\Rightarrow T = 8$ years

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

$$\Rightarrow 2100 = 2000\left(1+\frac{\frac{10}{2}}{100}\right)^{T}$$

$$\Rightarrow 1.05 = \left(1+\frac{5}{100}\right)^{T}$$

$\Rightarrow$ No. of years = 0.5

16. P = Rs. 500

A = Rs. 700

T = 8 years

$$\Rightarrow \text{Interest} = 700 - 500 = 200 = \frac{500 \times r \times 8}{100}$$

$\Rightarrow r = 5\%$p.a

17. $$CI = 10{,}000\left(1+\frac{\frac{8}{4}}{100}\right)^{2} - 10{,}000$$

= Rs. 816.

18. $$SI = \frac{PRT}{100}$$

$$= \frac{300 \times 6 \times 3.5}{100}$$

= Rs. 63

19. $$3I = \frac{300 \times 6 \times 3.5}{100} = \text{Rs.}63$$

$$\because SI = \frac{P \times R \times T}{100}$$

$$CI = 1000\left(1+\frac{10}{100}\right)^{3} - 1000$$

$= 1331 - 1000$

= Rs. 331

20. $$SI = \frac{PRT}{100} = 720 \times \frac{6}{100} \times 5 = 216$$

21. $$CI = P\left(1+\frac{\frac{r}{2}}{100}\right)^{T\times2} - P$$

$$= 8000\left(1+\frac{\frac{20}{2}}{100}\right)^{\frac{3}{2}\times2} - 8000$$

= Rs. 2648

22. $$\text{Loan} = \frac{x}{\left(1+\frac{r}{100}\right)^{2}} + \frac{x}{\left(1+\frac{r}{100}\right)}$$

Installment, x = 3364

$$1+\frac{r}{100} = 1+\frac{16}{100} = \frac{29}{25}$$

$$\Rightarrow \text{Loan} = \frac{3364}{\left(\frac{29}{25}\right)^{2}} + \frac{3364}{\frac{29}{25}}$$

= Rs. 5400

23. % Rate value = time = R

$$\therefore SI = \frac{PRT}{100}$$

$$\Rightarrow \frac{1}{16}P = P \times \frac{R}{100} \times R$$

$\Rightarrow R = 2.5$

24. Total amount to be paid = $25500 \times (1.04)^2$

$25500 \times (1.04)^2 = x(1.04) + x = 2.04x$

$$x = \frac{25500 \times (1.04)^2}{2.04} = 13520.$$

25. $\frac{8x}{100} + \frac{10(20000 - x)}{100} = \frac{20000 \times 9.4}{100}$

$= 2x = 20000(10 - 9.4)$

$x = 20000 \times 0.3 = 6000$

$20000 - x = 14000.$

26. $61800 \times (1.06)^2 = 1.06x + x$

$x = \frac{61800 \times (1.06)^2}{206} = 33708.$

27. $\frac{P + 6PT}{100} = 4800 = P + \frac{5P(T + 2)}{100}$

$6T = 5(T + 2)$ or $T = 10$

$P + \frac{60P}{100} = 4800$ or $1.6P = 4800$

$P = \frac{4800}{1.6} = 3000.$

28. $SI = \frac{700 \times 9 \times 73}{100 \times 365} = 12.6.$

29. $CI - SI = 1000 \times (1.1)^4 - 1000 - \frac{1000 \times 4 \times 10}{100}$

$= 1464.1 - 1000 - 400 = 64.1.$

30. Let capital = x

$\therefore \left(\frac{7}{100}\frac{1}{3}x\right) + \left(\frac{8}{100}\frac{1}{4}x\right) + \left(\frac{10}{100}\frac{5}{100}x\right) = 561$

$\Rightarrow \left(\frac{7}{3} + 2 + \frac{25}{6}\right)x = 561 \times 100$

$\Rightarrow x = \frac{56100 \times 6}{51}$

$x = 6600$

31. A lent Rs. 2500 to B @ 7% p.a for 4 years

$\therefore$ Interest $= \frac{PRT}{100}$

$= \frac{2500 \times 7 \times 4}{100} = 700$

$\because$ Total interest received = 1120,

$\therefore$ Interest paid by C

Interest by C $= \frac{PRT}{100}$

$\Rightarrow 420 = \frac{P \times 7 \times 4}{100}$

$\Rightarrow$ P = Rs. 1500