11- A sum of Rs. 12,000 deposited at compound interest becomes double after 5 years. After 20 years, it will become:

- **A.**96000
- **B.**120000
- **C.**124000
- **D.**192000
- **E.**None of these

Answer & Explanation

Answer - **D** (192000)

Explanation -

$$12000 \times \left(1+\frac{R}{100}\right)^5 = 24000 \implies \left(1+\frac{R}{100}\right)^5 = 2$$

$$\left(\left(1+\frac{R}{100}\right)^5\right)^4 = 2^4 = 16 \qquad \left(1+\frac{R}{100}\right)^{20} = 16 \qquad P\left(1+\frac{R}{100}\right)^{20} = 16P$$

$$12000 \left(1+\frac{R}{100}\right)^{20} = 16 \times 12000 = 192000$$

12- A sum is invested at compounded interest payable annually. The interest in two successive years was Rs. 500 and Rs. 540. The sum is

- **A.**3750
- **B.**5000
- **C.**5600
- **D.**6250
- **E.**None of these

Answer & Explanation

Answer - **D** (6250)

Explanation -

S.I. on Rs. 500 for 1 year = 540 - 500

$$= Rs. 40$$

$$Rate = \frac{100 \times 40}{500 \times 1} = 8\%$$

and

$$Sum = Rs. \frac{100 \times 500}{8 \times 1}$$

$$= Rs. 6250$$

13- Vivek borrowed a certain sum from Anil at a certain rate of simple interest for 2 years. He lent this sum to Ram at the same rate of interest compounded annually for the same period. At the end of two years, he received Rs. 4200 as compound interest but paid Rs. 4000 only as simple interest. Find the rate of interest.

- **A.**10%
- **B.**15%
- **C.**20%
- **D.**35%
- **E.**None of these

Answer & Explanation

Answer - **A** (10%)

Explanation -

Suppose the sum borrowed = Rs x

Rate of interest = R%

Time = 2 years

$$4000 = \frac{X \times R \times 2}{100}$$ Rx = 200000   ..(i)

Now

$$x \left(1 + \frac{R}{100}\right)^2 = x + 4200$$ $$\frac{xR^2}{10000} + \frac{2RX}{100} = 4200$$

$$20R + 4000 = 4200$$

$$R = 10.$$

14- If a sum on compound interest becomes three times in 4 years, then with the same interest rate, the sum will become 27 times in:

- **A.**8
- **B.**12
- **C.**24
- **D.**36
- **E.**None of these

Answer & Explanation

Answer - **D** (36)

Explanation - If a sum becomes x times in y years at CI then it will be $(x)^n$ times in ny years.

15- On a sum of money, the simple interest for 2 years is Rs. 660, while the compound interest is Rs. 696.30, the rate of interest being the same in both the cases. The rate of interest is:

- **A.**10
- **B.**12
- **C.**15
- **D.**18
- **E.**None of these

Answer & Explanation

Answer - **D** (None of these)

Explanation -

Difference in C.I. ans S.I. for 2 years = Rs. (696.30 - 660) = Rs. 36.30

S.I. for one year = Rs. 330.

S.I. on Rs. 330 for 1 year = Rs. 36.30

$$Rate = \frac{100 \times 36.30}{330 \times 1} \% = 11\%$$

16- On a certain sum of money, the simple interest for 2 years is Rs. 200 at the rate of 7% per annum. Find the difference in C.I. and S.I.

- **A.**7
- **B.**9
- **C.**11
- **D.**13
- **E.**None of these

Answer & Explanation

Answer - **A** (7)

Explanation -

$$C.I. - S.I. = \frac{R \times S.I.}{200} = \frac{7 \times 200}{200}$$

[Here, R = 7 and S.I. = 200]

Rs. 7

17- A sum amounts to Rs. 1352 in 2 years at 4% compound interest. The sum is

- **A.** 1200
- **B.** 1250
- **C.** 1260
- **D.** 1300
- **E.** None of these

Answer & Explanation

Answer - **B** (1250)

Explanation -

Let the sum be P. Then,

$$1352 = P \left(1 + \frac{4}{100}\right)^2$$

$$1352 = P \times \frac{26}{25} \times \frac{26}{25}$$

$$P = \frac{1352 \times 25 \times 25}{26 \times 26} = 1250$$

Principal = Rs. 1250

18- A bank offers 5% compound interest calculated on half-yearly basis. A customer deposits Rs. 1600 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is:

- **A.**Rs 120

- **B.**Rs 121

- **C.**Rs 122

- **D.**Rs 123

- **E.**None of these

Answer & Explanation
Answer - **B** (Rs 121)
Explanation -

$$\text{Amount} = \text{Rs.} \left[1600 \times \left(1 + \frac{5}{2 \times 100}\right)^2 + 1600 \times \left(1 + \frac{5}{2 \times 100}\right) \right]$$

$$= \text{Rs.} \left[1600 \times \frac{41}{40} \times \frac{41}{40} + 1600 \times \frac{41}{40} \right]$$

$$= \text{Rs.} \left[1600 \times \frac{41}{40} \left(\frac{41}{40} + 1\right) \right]$$

$$= \text{Rs.} \left[\frac{1600 \times 41 \times 81}{40 \times 40} \right]$$

$$= \text{Rs. } 3321.$$

C.I. = Rs. (3321 - 3200) = Rs. 121

19- The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. The sum (in Rs.) is:

- **A.**625

- **B.**630

- **C.**640

- **D.**650

- **E.**None of these

Answer - **A** (625)

Explanation - Let the sum be Rs. x. Then,

$$C.I. = [\ x(1 + \frac{4}{100})^2 - x\ ] = (\frac{676}{625}x - x) = \frac{51}{625}x.$$

$$S.I. = \frac{x \times 4 \times 2}{100} = \frac{2x}{25}.$$

$$\frac{51x}{625} - \frac{2x}{25} = 1$$

$$x = 625.$$

20- There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest of Rs. 12,000 after 3 years at the same rate?

- **A.**Rs. 2160
- **B.**Rs. 3120
- **C.**Rs. 3972
- **D.**Rs. 6240
- **E.**None of these

Answer - **C** (Rs. 3972)

Explanation - Let P = Rs. 100. Then, S.I. Rs. 60 and T = 6 years.

$$R = \frac{100 \times 60}{100 \times 6} = 10\% \text{ p.a.}$$

Now, P = Rs. 12000. T = 3 years and R = 10% p.a.

$$C.I. = Rs.[12000 \times \{(1 + \frac{10}{100})^3 - 1\}]$$

= Rs. 12000 x $\dfrac{331}{1000}$

= 3972.