21- The compound interest on Rs. 30,000 at 7% per annum is Rs. 4347. The period (in years) is:

- **A.**2
- **B.**2 1/2
- **C.**3
- **D.**4
- **E.**None of these

Answer & Explanation

Answer - **A** (2)

Explanation - Amount = Rs. (30000 + 4347) = Rs. 34347.

Let the time be *n* years.

$$\text{Then, } 30000 \left(1 + \frac{7}{100}\right)^n = 34347$$

$$\left(\frac{107}{100}\right)^n = \frac{34347}{30000} = \frac{11449}{10000} = \left(\frac{107}{100}\right)^2$$

n = 2 years.

22- What will be the compound interest on a sum of Rs. 25,000 after 3 years at the rate of 12 p.c.p.a.?

- **A.**Rs. 9000.30
- **B.**Rs. 9720
- **C.**Rs. 10123.20
- **D.**Rs. 10483.20
- **E.**None of these

Answer & Explanation

Answer - **C** (Rs. 10123.20)

Explanation -

$$\text{Amount} = \text{Rs. } 25000 \times \left(1 + \frac{12}{100}\right)^3$$

$$= \text{Rs. } 25000 \times \frac{28}{25} \times \frac{28}{25} \times \frac{28}{25}$$

$$= \text{Rs. } 35123.20$$

C.I. = Rs. (35123.20 - 25000) = Rs. 10123.20

23- The least number of complete years in which a sum of money put out at 20% compound interest will be more than doubled is:

- **A.**3
- **B.**4
- **C.**5
- **D.**6
- **E.**None of these

Answer & Explanation

Answer - **B** (4)

Explanation -

$$P\left(1 + \frac{20}{100}\right)^n > 2P \qquad \left(\frac{6}{5}\right)^n > 2.$$

$$\text{Now, } \left(\frac{6}{5} \times \frac{6}{5} \times \frac{6}{5} \times \frac{6}{5}\right) > 2.$$

So, n = 4 years.

24- The effective annual rate of interest corresponding to a nominal rate of 6% per annum payable half-yearly is:

- **A.**6.06%
- **B.**6.07%
- **C.**6.08%
- **D.**6.09%
- **E.**None of these

Answer & Explanation

Answer - **D** (6.09%)

Explanation -

$$\text{Amount of Rs. 100 for 1 year when compounded half-yearly} \} = \text{Rs. } 100 \times \left(1 + \frac{3}{100}\right)^2 = \text{Rs. } 106.09$$

Effective rate = (106.09 - 100)% = 6.09%

25- Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs. 4000 for 2 years at 10% per annum. The sum placed on simple interest is:

- **A.**Rs 1550
- **B.**Rs 1650
- **C.**Rs 1750
- **D.**Rs 2000
- **E.**None of these

Answer & Explanation

Answer - **C** (Rs 1750)

Explanation -

$$C.I. = Rs.\ 4000 \times \left(1 + \frac{10}{100}\right)^2 - 4000$$

$$= Rs.\ \left(4000 \times \frac{11}{10} \times \frac{11}{10} - 4000\right)$$

$$= Rs.\ 840.$$

$$Sum = Rs.\ \frac{420 \times 100}{3 \times 8} = Rs.\ 1750.$$

26- If the simple interest on a sum of money for 2 years at 5% per annum is Rs. 50, what is the compound interest on the same at the same rate and for the same time?

- **A.**Rs 51.25
- **B.**Rs 52
- **C.**Rs 54.25
- **D.**Rs 60
- **E.**None of these

Answer & Explanation

Answer - **A** (Rs 51.25)

Explanation -

$$\text{Sum} = \text{Rs.}\ \frac{50 \times 100}{2 \times 5} = \text{Rs. } 500.$$

$$\text{Amount} = \text{Rs. } 500 \times \left(1 + \frac{5}{100}\right)^2$$

$$= \text{Rs. } 500 \times \frac{21}{20} \times \frac{21}{20}$$

$$= \text{Rs. } 551.25$$

C.I. = Rs. (551.25 - 500) = Rs. 51.25

27- The difference between simple interest and compound on Rs. 1200 for one year at 10% per annum reckoned half-yearly is:

- **A.**Rs 2.5
- **B.**Rs 3
- **C.**Rs 3.75
- **D.**Rs 4
- **E.**None of these

Answer & Explanation

Answer - **B** (Rs 3)

Explanation -

$$\text{S.I.} = \text{Rs}\ \frac{1200 \times 10 \times 1}{100} = \text{Rs. } 120.$$

$$\text{C.I.} = \text{Rs.}\left[1200 \times \left(1 + \frac{5}{}\right)^2 - 1200\right] = \text{Rs. } 123.$$

100

Difference = Rs. (123 - 120) = Rs. 3.

28- The difference between compound interest and simple interest on an amount of Rs. 15,000 for 2 years is Rs. 96. What is the rate of interest per annum?

- **A.**8%
- **B.**10%
- **C.**12%
- **D.**Cannot be determined
- **E.**None of these

Answer & Explanation

Answer - **A** (8%)

Explanation -

$$\left[15000 \times \left(1 + \frac{R}{100} \right)^2 - 15000 \right] - \left(\frac{15000 \times R \times 2}{100} \right) = 96$$

$$15000 \left[\left(1 + \frac{R}{100}\right)^2 - 1 - \frac{2R}{100} \right] = 96$$

$$15000 \left[\frac{(100 + R)^2 - 10000 - (200 \times R)}{10000} \right] = 96$$

$$R^2 = \frac{96 \times 2}{3} = 64$$

R = 8.

Rate = 8%.

29- The population of a town is 50,000. It decreases by 20 per thousand per year. Find out the population after 2 years?

- **A.**Rs. 46,000
- **B.**Rs. 46,020

- **C.**Rs. 48,000
- **D.**Rs. 48,020
- **E.**None of these

Answer & Explanation

Answer - **D** (Rs. 48,020)

Explanation -

Required population

$$= \text{Initial population} \quad (1 - \frac{r}{1000})^n$$

$$= 50{,}000 \quad (1 - \frac{20}{1000})^2$$

$$= 48{,}020$$

30- What sum invested for 2 years at 12% compounded annually will grow to Rs. 4390.40?

- **A.**Rs. 4000
- **B.**Rs. 3875
- **C.**Rs. 3800
- **D.**Rs. 3500
- **E.**None of these

Answer & Explanation

Answer - **D** (Rs. 3500)

Explanation -

$$P\ (1 + \frac{R}{100})^T = \text{Amount}$$

$$P \quad (1 + \frac{12}{100})^2 = 4390.40$$

$$P \quad (\frac{112}{100})^2 = 4390.40$$

$$P = \frac{43904000}{112 \times 112} = 3500.$$