Exercise 11D

Q1.

Answer :

(c) Rs. 832

$$A = P \times \left(1 + \frac{R}{100}\right)^n$$
$$= \text{Rs. } 5000 \times \left(1 + \frac{8}{100}\right)^2$$
$$= \text{Rs. } 5000 \times \left(\frac{108}{100}\right)^2$$
$$= \text{Rs. } 5000 \times \left(\frac{27}{25}\right)^2$$
$$= \text{Rs. } 5000 \times \left(\frac{27}{25}\right) \times \left(\frac{27}{25}\right)$$
$$= \text{Rs. } (8 \times 27 \times 27)$$
$$= \text{Rs. } 5832$$
$$\therefore \text{Interest} = \text{amount} - \text{principal} = \text{Rs}\left(5832 - 5000\right) = \text{Rs } 832$$

Q2.

Answer :

(b) Rs. 3310

$$A = P \times \left(1 + \frac{R}{100}\right)^n$$
$$= \text{Rs. } 10000 \times \left(1 + \frac{10}{100}\right)^3$$
$$= \text{Rs. } 10000 \times \left(\frac{110}{100}\right)^3$$
$$= \text{Rs. } 10000 \times \left(\frac{11}{10}\right)^3$$
$$= \text{Rs. } 10000 \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right)$$
$$= \text{Rs. } (10 \times 11 \times 11 \times 11)$$
$$= \text{Rs. } 13310$$

$\therefore$ Compound interest = amount $-$ principal = Rs $\left(13310 - 10000\right)$ = Rs 3310

Q3.

Answer :

(a) Rs 1872

Here, $A = P \times \left(1 + \frac{R}{100}\right)^1 \times \left(1 + \frac{\frac{1}{2}R}{100}\right)$

$= \text{Rs } 10000 \times \left(1 + \frac{12}{100}\right) \times \left(1 + \frac{\frac{1}{2} \times 12}{100}\right)$

$= \text{Rs } 10000 \times \left(\frac{100+12}{100}\right) \times \left(\frac{100+6}{100}\right)$

$= \text{Rs } 10000 \times \left(\frac{112}{100}\right) \times \left(\frac{106}{100}\right)$

$= \text{Rs } 10000 \times \left(\frac{28}{25}\right) \times \left(\frac{53}{50}\right)$

$= \text{Rs } (8 \times 28 \times 53)$

$= \text{Rs } 11872$

$\therefore$ Compound interest = amount $-$ principal = Rs $\left(11872 - 10000\right)$ = Rs 1872

Q4.

Answer :

(c) Rs 961

Here, $A = P \times \left(1 + \frac{R}{100}\right)^2 \times \left(1 + \frac{\frac{1}{4}R}{100}\right)$

$= \text{Rs. } 4000 \times \left(1 + \frac{10}{100}\right)^2 \times \left(1 + \frac{\frac{1}{4} \times 10}{100}\right)$

$= \text{Rs. } 4000 \times \left(\frac{100+10}{100}\right)^2 \times \left(\frac{40+1}{40}\right)$

$= \text{Rs. } 4000 \times \left(\frac{110}{100}\right)^2 \times \left(\frac{41}{40}\right)$

$= \text{Rs. } 4000 \times \left(\frac{11}{10}\right) \times \left(\frac{11}{10}\right) \times \left(\frac{41}{40}\right)$

$= \text{Rs. } (11 \times 11 \times 41)$

$= \text{Rs. } 4961$

$\therefore$ Compound interest = amount $-$ principal = Rs $\left(4961 - 4000\right)$ = Rs 961

Q5.

Answer :

(b) Rs. 5051

$$\text{Here, } A = \text{Rs. } P \times \left(1+\frac{p}{100}\right) \times \left(1+\frac{q}{100}\right) \times \left(1+\frac{r}{100}\right)$$
$$= \text{Rs. } 25000 \times \left(1+\frac{5}{100}\right) \times \left(1+\frac{6}{100}\right) \times \left(1+\frac{8}{100}\right)$$
$$= \text{Rs. } 25000 \times \left(\frac{105}{100}\right) \times \left(\frac{106}{100}\right) \times \left(\frac{108}{100}\right)$$
$$= \text{Rs. } 25000 \times \left(\frac{21}{20}\right) \times \left(\frac{53}{50}\right) \times \left(\frac{27}{25}\right)$$
$$= \text{Rs. } (21 \times 53 \times 27)$$
$$= \text{Rs. } 30051$$
$$\therefore \text{ Compound interest } = \text{ amount } - \text{principal} = \text{Rs. } \left(30051 - 25000\right) = \text{Rs. } 5051$$

Q6.

Answer :

(b) Rs. 510

$$\text{Rate of interest compounded half yearly } = \frac{8}{2}\% = 4\%$$
$$\text{Time } = 1 \text{ year} = 2 \text{ half years}$$
$$\text{Now, } A = P \times \left(1+\frac{R}{100}\right)^n$$
$$= \text{Rs. } 6250 \times \left(1+\frac{4}{100}\right)^2$$
$$= \text{Rs. } 6250 \times \left(\frac{104}{100}\right)^2$$
$$= \text{Rs. } 6250 \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right)$$
$$= \text{Rs. } (10 \times 26 \times 26)$$
$$= \text{Rs. } 6760$$
$$\therefore \text{ Compound interest } = \text{amount} - \text{principal} = \text{Rs. } \left(6760 - 6250\right) = \text{Rs. } 510$$

Q7.

Answer :

(a) Rs.1209

$$\text{Time } = 6 \text{ months } = 2 \text{ quater years}$$
$$\text{Rate compounded quarter yearly } = \frac{6}{4}\% = \frac{3}{2}\%$$
$$\text{Now, } A = P \times \left(1+\frac{R}{100}\right)^n$$
$$= \text{Rs. } 40000 \times \left(1+\frac{3}{100\times 2}\right)^2$$
$$= \text{Rs. } 40000 \times \left(\frac{203}{200}\right)^2$$
$$= \text{Rs. } 40000 \times \left(\frac{203}{200}\right) \times \left(\frac{203}{200}\right)$$
$$= \text{Rs. } (203 \times 203)$$
$$= \text{Rs. } 41209$$

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