

Exercise 11C

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

$$= Rs. \ 20000 \times \left(1 + \frac{3}{100}\right)^{2}$$

$$= Rs. \ 20000 \times \left(\frac{100 + 3}{100}\right)^{2}$$

$$= Rs. \ 20000 \times \left(\frac{103}{100}\right)^{2}$$

$$= Rs. \ 20000 \times \left(\frac{103}{100}\right) \times \left(\frac{103}{100}\right)$$

$$= Rs. \ (2 \times 103 \times 103)$$

$$= Rs. \ 21218$$
Therefore, Sheela gets Rs. \ 21218 after 1 year.

Q8.

Answer:

Let the principal amount be P = Rs. 65536.

Annual rate of interest, $R = \frac{25}{2} \%$

Rate of interest for a half year $=\frac{25}{4}\%$

Time, n = 2 years = 4 half years

Then the amount with the compound interest is given by

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

$$= \text{Rs. } 65536 \times \left(1 + \frac{25}{100 \times 4}\right)^{4}$$

$$= \text{Rs. } 65536 \times \left(\frac{400 + 25}{400}\right)^{4}$$

$$= \text{Rs. } 65536 \times \left(\frac{425}{400}\right)^{4}$$

$$= \text{Rs. } 65536 \times \left(\frac{17}{16}\right)^{4}$$

$$= \text{Rs. } 65536 \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right) \times \left(\frac{17}{16}\right)$$

$$= \text{Rs. } (17 \times 17 \times 17 \times 17)$$

$$= \text{Rs. } 83521$$
Now, CI = $A - P$

$$= \text{Rs. } \left(83521 - 65536\right) = \text{Rs. } 17985$$

Therefore, interest earned when compounded half yearly = Rs. 17985 Amount when the interest is compounded yearly is given by

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

$$= Rs. 65536 \times \left(1 + \frac{25}{100 \times 2}\right)^{2}$$

$$= Rs. 65536 \times \left(\frac{200 + 25}{200}\right)^{2}$$

$$= Rs. 65536 \times \left(\frac{225}{200}\right)^{2}$$

$$= Rs. 65536 \times \left(\frac{9}{8}\right)^{2}$$

$$= Rs. 65536 \times \left(\frac{9}{8}\right) \times \left(\frac{9}{8}\right)$$

$$= Rs. 82944$$

Therefore, CI = $A - P = \text{Rs.} \left(82944 - 65536 \right) = \text{Rs.} 17408$

.. Difference between the interests compounded half yearly and yearly = Rs. $\left(17985-17408\right)$ = Rs. 577

Q9.

Answer:

Let the principal amount be P = Rs 32000.

Annual rate of interest, R=5%

Rate of interest for a quarter year $=\frac{5}{4}$ %

Time, n = 6 months = 2 quarter years

Then the amount with the compound interest is given by

$$A = \text{Rs. } P \times \left(1 + \frac{R}{100}\right)^{n}$$

$$= \text{Rs. } 32000 \times \left(1 + \frac{5}{100 \times 4}\right)^{2}$$

$$= \text{Rs. } 32000 \times \left(\frac{400 + 5}{400}\right)^{2}$$

$$= \text{Rs. } 32000 \times \left(\frac{405}{400}\right)^{2}$$

$$= \text{Rs. } 32000 \times \left(\frac{81}{80}\right)^{2}$$

$$= \text{Rs. } 32000 \times \left(\frac{81}{80}\right) \times \left(\frac{81}{80}\right)$$

$$= \text{Rs. } (5 \times 81 \times 81)$$

$$= \text{Rs. } 32805$$

Therefore, Sudershan will receive an amount of Rs. 32805 after 6 months.

Q10.

Let the principal amount be P = Rs 390625.

Annual rate of interest, R = 16%

Rate of interest for a quarter year $=\frac{16}{4}\%=4\%$

Time, n = 1 year = 4 quarter years

Then the amount with the compound interest is given by

$$A = \text{Rs. } P \times \left(1 + \frac{R}{100}\right)^{n}$$

$$= \text{Rs. } 390625 \times \left(1 + \frac{4}{100}\right)^{4}$$

$$= \text{Rs. } 390625 \times \left(\frac{100 + 4}{100}\right)^{4}$$

$$= \text{Rs. } 390625 \times \left(\frac{104}{100}\right)^{4}$$

$$= \text{Rs. } 390625 \times \left(\frac{26}{25}\right)^{4}$$

$$= \text{Rs. } 390625 \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right) \times \left(\frac{26}{25}\right)$$

$$= \text{Rs. } (26 \times 26 \times 26 \times 26)$$

$$= \text{Rs. } 456976$$

Therefore, Arun has to pay Rs 456976 after 1 year.

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