

EXERCISES 21.2.1

$$\begin{aligned} \text{Q1. (a) } I &= n \times P \times \frac{r}{100} \\ &= 6 \times 1340 \times \frac{10}{100} \\ &= 804 \quad \text{i.e., } \$804 \end{aligned}$$

$$\begin{aligned} \text{(b) } I &= 4 \times 1562 \times \frac{9}{100} \\ &= 562.32 \quad \text{i.e., } \$562.32 \end{aligned}$$

(c) - (e) see answers in book.

$$\begin{aligned} \text{(f) } I &= 2 \times 6250 \times \frac{6.5}{100} \\ &= 812.5 \\ \text{i.e., } & \$812.5. \end{aligned}$$

$$\begin{aligned} \text{Q2. (a) } P &= 1340, r = 12 \\ n &= \frac{24}{12} = 2 \text{ (yrs).} \end{aligned}$$

$$\begin{aligned} \therefore I &= nP \times \frac{r}{100} = 2 \times 1340 \times \frac{12}{100} \\ &= 321.60 \end{aligned}$$

i.e., \$321.60

$$\begin{aligned} \text{(b) } P &= 1562, r = 11, n = \frac{36}{12} = 3 \\ \therefore I &= 3 \times 1562 \times \frac{11}{100} \\ &= 515.46 \\ \text{i.e., } & \$515.46 \end{aligned}$$

$$\begin{aligned} \text{(c) } P &= 780, r = 4, n = \frac{18}{12} = 1.5 \\ I &= 1.5 \times 780 \times \frac{4}{100} \\ &= 46.8 \\ \text{i.e., } & \$46.80. \end{aligned}$$

$$\begin{aligned} \text{(d) } P &= 1550, r = 5, n = \frac{15}{12} = 1.25 \\ I &= 1.25 \times 1550 \times \frac{5}{100} \\ &= 96.875 \\ \text{i.e., } & \$96.88 \end{aligned}$$

$$\begin{aligned} \text{(e) } P &= 10200, r = 7.5, n = \frac{3}{12} \\ \therefore I &= \frac{3}{12} \times 10200 \times \frac{7.5}{100} \\ &= 191.25 \end{aligned}$$

i.e., \$191.25

$$\begin{aligned} \text{(f) } P &= 6250, r = 4.5, n = \frac{8}{12} \\ \therefore I &= \frac{8}{12} \times 6250 \times \frac{4.5}{100} \\ &= 187.50 \end{aligned}$$

i.e., \$187.50

$$\begin{aligned} \text{Q3. (a) } P &= 120, I = 50.40, n = 6 \\ I &= nP \times \frac{r}{100} \end{aligned}$$

$$\therefore 50.40 = 6 \times 120 \times \frac{r}{100}$$

$$\Leftrightarrow r = \frac{50.40}{6 \times 120} \times 100 = 7$$

i.e., 7% p.a.

$$\begin{aligned} \text{(b) } P &= 568, I = 51.12, n = 3 \\ 51.12 &= 3 \times 568 \times \frac{r}{100} \end{aligned}$$

$$\Leftrightarrow r = \frac{51.12}{3 \times 568} \times 100 = 3$$

i.e., 3% p.a.

(c) - (f) see answers in book.

i.e., from $I = nP \times \frac{r}{100}$

we have $r = \frac{I}{nP} \times 100$.

$$Q4. (a) I = n \times P \times \frac{r}{100}$$

$$\therefore 63 = 7 \times P \times \frac{3}{100}$$

$$\Leftrightarrow P = \frac{63}{7} \times \frac{100}{3} = 300.$$

i.e., 300 marks.

$$(b) 165.90 = 3 \times P \times \frac{r}{100} \Leftrightarrow P = \frac{165.9 \times 100}{3 \times 7} = 790$$

i.e., 790 marks.

(c) - (f) Use the following,

$$I = n \times P \times \frac{r}{100} \Leftrightarrow P = \frac{100I}{nr}$$

see answers in text book.

$$Q5. (a) I = n \times P \times \frac{r}{100}$$

$$546 = n \times 1560 \times \frac{r}{100}$$

$$\Leftrightarrow n = \frac{546 \times 100}{1560 \times 7} = 5$$

i.e., 5 years.

$$(b) 42 = n \times 200 \times \frac{3}{100} \Leftrightarrow n = \frac{4200}{600} = 7$$

i.e., 7 years.

(c) - (f) From $I = n \times P \times \frac{r}{100}$

$$\Leftrightarrow n = \frac{100I}{rP}$$

see answers in text book.

$$Q6. (a) 210 = n \times 3000 \times \frac{r}{100}$$

$$\Leftrightarrow n = \frac{210 \times 100}{7 \times 3000}$$

$$= 1$$

i.e., 1 yr = 12 months.

$$(b) 98 = n \times 5600 \times \frac{3}{100}$$

$$\Leftrightarrow n = \frac{98 \times 100}{5600 \times 3} = \frac{7}{12}$$

i.e., $\frac{7}{12}$ th of a yr = $\frac{7}{12} \times 12$ months = 7 months

$$(c) 17.20 = n \times 1290 \times \frac{8}{100} \Leftrightarrow n = \frac{1}{6}$$

$\frac{1}{6}$ th of a yr = $\frac{1}{6} \times 12$ months = 2 months.

$$(d) 45.33 = n \times 3400 \times \frac{2}{100} \Leftrightarrow n = 0.6666$$

i.e., 0.6666 yr = 0.6666 \times 12 months = 7.99 months

i.e., 8 months.

$$(e) 64.35 = n \times 780 \times \frac{r}{100} \Leftrightarrow n = \frac{11}{12}$$

i.e., $\frac{11}{12}$ yr = $\frac{11}{12} \times 12$ months = 11 months

$$(f) 8.10 = n \times 2700 \times \frac{1}{100} \Leftrightarrow n = 0.3$$

i.e., 0.3 yr = 0.3 \times 12 months = 3.6 months

Q7. Complete solution is given in the answer section in text book.

EXERCISES 21.2.2

Q1. This question assumes that we are dealing with compound interest.

$$(a) A = 2300 \times \left(1 + \frac{4}{100}\right)^{12} \\ = 3682.37$$

i.e., 3682.37 yen
(approx 3682 yen).

$$(b) A = 600 \times \left(1 + \frac{14}{100}\right)^{20} \\ = 8246.09$$

i.e., approx 8246 yen.

(c)-(f) Use $A = P \left(1 + \frac{r}{100}\right)^n$
see answers in text book.

Q2. This question assumes that we are dealing with compound interest.

$$(a) A = 4800 \left(1 + \frac{8}{100}\right)^{12} \\ = 12087.22$$

i.e., approx 12087 marks.

(b)-(f) are all computed by using the expression $A = P \left(1 + \frac{r}{100}\right)^n$.
see answers in text book.

Q3. (a) rate per annum is 2%
compounding time = 3 months
 $= \frac{3}{12}$ yr.

$$\therefore A = 14900 \times \left(1 + \frac{2}{100}\right)^{\frac{3}{12}} \\ = 14973.947$$

i.e., approx 14974 francs.

$$(b) A = 30900 \times \left(1 + \frac{4}{100}\right)^{\frac{3}{12}}$$

i.e., 2 months = $\frac{2}{12}$ yr

$$\therefore A = 30900 \times (1.04)^{\frac{1}{6}} \\ = 31102.64$$

i.e., approx 31101 francs.

$$(c) A = 29700 \times \left(1 + \frac{8}{100}\right)^{\frac{3}{12}}$$

$$= 29700 \times (1.08)^{\frac{1}{4}} \\ = 30089.41$$

i.e., 30089 francs

$$(d) A = 31200 \times \left(1 + \frac{14}{100}\right)^{\frac{4}{12}}$$

$$= 32592.89$$

i.e., approx 32593 francs

$$(e) A = 39000 \times \left(1 + \frac{6}{100}\right)^{\frac{1}{12}}$$

$$= 39189.83$$

i.e., approx 39190 francs.

$$(f) A = 27000 \times \left(1 + \frac{14}{100}\right)^{\frac{3}{12}}$$

$$= 27899.08$$

i.e., approx 27899 francs.

$$Q4. (a) A = 21700 \times \left(1 + \frac{8}{100}\right)^{\frac{3}{12}}$$

$$= 22121.55$$

i.e., approx 22122 yen.

$$(b) A = 28700 \times \left(1 + \frac{0}{100}\right)^{\frac{5}{12}}$$

$$= 28700$$

i.e., 28700 yen.

$$(c) A = 23100 \times \left(1 + \frac{4}{100}\right)^{\frac{7}{12}}$$

$$= 23634.59$$

i.e., approx 23635 yen.