Assignment 1

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***Abstract*—This document gives the solution for Assignment 1 (ICSE Class 10 Maths 2018 Q.1(b)).**

1 ICSE Class 10 Maths 2018

1.1. (Q.1(b)) Q.) Sonia had a recurring deposit account in a bank and deposited ₹600 per month for 2½ years. If the rate of interest was 10% p.a., find the maturity value of this account.

Solution:

- *Given* :-
  Number of months, n = number of years x 12 = 2.5 x 12 = 30
  The various input/output parameters cosidered in this problem are listed in Table (1.1.1).

Symbol	Value	Description/Formula
P	600	Sum deposited every month
n	30	Number of months
r	10	Rate of interest (p.a.)
P_{total}	?	Total sum deposited $P_{total} = P \times n$
I	?	Total interest $I = P \times \frac{n(n+1)}{2\times12} \times \frac{r}{100}$
$M.V.$	?	Maturity Value of the account $M.V. = P_{total} + I$ $M.V. = P \times n + P \times \frac{n(n+1)}{2\times12} \times \frac{r}{100}$

TABLE 1.1.1

- *Formula* :-
  Total sum deposited = Sum deposited every month x Number of months

$$P_{total} = P \times n \tag{1.1.1}$$

Interest on the total sum deposited,

$$I = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \tag{1.1.2}$$

Maturity value of the recurring deposit, M.V. = Total sum deposited + Interest on the total sum deposited

$$M.V. = P_{total} + I \tag{1.1.3}$$

- *To Find* :-
  The maturity value of the given account

- *Solution* :-
  From eq.s (1.1.1), (1.1.2), (1.1.3), we get :-

$$M.V. = P \times n + P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100} \tag{1.1.4}$$

$$= 600 \times 30 + 600 \times \frac{30(31)}{24} \times \frac{10}{100} \tag{1.1.5}$$

$$= 18000 + 600 \times \frac{5 \times 31}{4} \times \frac{1}{10} \tag{1.1.6}$$

$$= 18000 + 600 \times \frac{155}{4} \times \frac{1}{10} \tag{1.1.7}$$

$$= 18000 + 15 \times 155 \tag{1.1.8}$$

$$= 18000 + 2325 \tag{1.1.9}$$

$$= 20325 \tag{1.1.10}$$

Therefore, the maturity value of the account is ₹20325.

The code in

Assignment1/codes/recdep.py

verifies the solution.

Table (1.1.1) is taken from

Assignment1/tables/table1_variables.tex