PART III

EXERCISE

1. Peter deposited shs. 2,500,000 in a bank which offers a compound interest of 15% per annum. How much money did he have in the bank at the end of two years?

Method 1

First year: Principal $= 2{,}500{,}000$

Interest is calculated as $I = \frac{PTR}{100}$

$$I_1 = \frac{PTR}{100}$$

$$I_1 = \frac{2{,}500{,}000 \times 15 \times 1}{100}$$

$$I_1 = \text{shs. } 375{,}000$$

Amount by end of year 1

$$= 2{,}500{,}000 + 375{,}000$$
$$= \text{shs. } 2{,}875{,}000$$

Second year: Principal $= 2{,}875{,}000$

Interest is calculated as $I = \frac{PTR}{100}$

$$I_2 = \frac{PTR}{100}$$

$$I_2 = \frac{2{,}875{,}000 \times 15 \times 1}{100}$$

$$I_2 = \text{shs. } 431{,}250$$

Amount by end of year 2

$$= 2{,}875{,}000 + 431{,}250$$
$$= \text{shs. } 3{,}306{,}250$$

Method 2

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

$$A = 2{,}500{,}000\left(1 + \frac{15}{100}\right)^2$$

$$A = 2{,}500{,}000(1 + 0.15)^2$$

$$A = 2{,}500{,}000(1.15)^2$$

$$A = 2{,}500{,}000 \times 1.3225$$

$$A = \text{shs. } 3{,}306{,}250$$

2. Paul and Mary invested Shs. 600,000 each in a savings society for 2 years. Paul opted for simple interest while Mary opted for compound interest. Both interest rates were 12% per annum.

(a) Find the interest earned by each of them.

Paul

$$I = \frac{PTR}{100}$$

$$I = \frac{600{,}000 \times 2 \times 12}{100}$$

$$I = \text{shs. } 144{,}000$$

Mary

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

$$A = 600{,}000\left(1 + \frac{12}{100}\right)^2$$

$$A = 600{,}000(1 + 0.12)^2$$

$$A = 600{,}000(1.12)^2$$

$$A = 600{,}000 \times 1.2544$$

$$A = \text{shs. } 752{,}640$$

Compound interest = Amount – Principal

Compound interest $= 752{,}640 - 600{,}000$

Compound interest $= \text{shs. } 152{,}640$

(b) Who earned more interest and by how much?

Mary earned more and it was $= 152{,}640 - 144{,}000 = \text{shs. } 8{,}640$ more

3. Mukasa wants to buy a house which is priced at shs. 56,000,000. A deposit of 25% of the value of the house is required. A bank will lend him the rest of the money at a compound interest of 15% per annum and payable after two years. Calculate the:

(i) deposit Mukasa must make

$$\text{Deposit} = \frac{25}{100} \times 56{,}000{,}000$$

$$\text{Deposit} = \text{shs. } 14{,}000{,}000$$

(ii) amount of the money Mukasa will have to pay the bank after two years.

Money borrowed by Mukasa $=$

$$56{,}000{,}000 - 14{,}000{,}000$$
$$= \text{shs. } 42{,}000{,}000$$

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

$$A = 42{,}000{,}000\left(1 + \frac{15}{100}\right)^2$$

$$A = 42{,}000{,}000(1 + 0.15)^2$$

$$A = 42{,}000{,}000(1.15)^2$$

$$A = 42{,}000{,}000 \times 1.3225$$

$$A = \text{shs. } 55{,}545{,}000$$

(iii) total money which Mukasa will spend to buy the house.

$$= 14{,}000{,}000 + 55{,}545{,}000 = \text{shs. } 69{,}545{,}000$$

END.