

TEXT BOOK EXERCISE 7.7

Q. 1. The value of a machine depreciates at the rate of 10% per annum. If its present value is ₹ 10,00,000. What will be its value after two years? Also, find the depreciation.

Solution. Here, Present value of a machine (P)
= ₹ 10,00,000

Rate of depreciation (R) = 10% per annum

Time (T) = 2 years

Value of machine after 2 years

$$= P \left(1 - \frac{R}{100} \right)^T$$

$$= ₹ 10,00,000 \left(1 - \frac{10}{100}\right)^2$$

$$= ₹ 10,00,000 \left(\frac{90}{100}\right)^2$$

$$= ₹ 10,00,000 \left(\frac{9}{10}\right)^2$$

$$= ₹ 10,00,000 \times \frac{9}{10} \times \frac{9}{10}$$

$$= ₹ 8,10,000 \text{ Ans.}$$

$$\text{Depreciation} = ₹ 10,00,000 - ₹ 8,10,000$$

$$= ₹ 1,90,000 \text{ Ans.}$$

Q. 2. The cost of a plot is ₹ 6,40,000. It increases at a rate of 5% of its previous value after every year. What will be its value after two years ?

Solution. The cost of Plot (P) = ₹ 6,40,000

Rate of increase (R) = 5% per annum

Time (T) = 2 years

The value of plot after two years

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

$$= ₹ 6,40,000 \left(1 + \frac{5}{100}\right)^2$$

$$= ₹ 6,40,000 \left(\frac{105}{100}\right)^2$$

$$= ₹ 6,40,000 \left(\frac{21}{20}\right)^2$$

$$= ₹ 6,40,000 \times \frac{21}{20} \times \frac{21}{20}$$

$$= ₹ 7,05,600 \text{ Ans.}$$

Q. 3. A person purchased a second hand bike for ₹ 16,000. If its rate depreciates at 5% per year. What will be its value after 2 years ?

Solution. Price of the bike (P) = ₹ 16,000

Rate of depreciation (R) = 5% per annum

Time (T) = 2 years

The value of bike after 2 years

$$= P \left(1 - \frac{R}{100}\right)^T$$

$$= ₹ 16,000 \left(1 - \frac{5}{100}\right)^2$$

$$= ₹ 16,000 \left(\frac{95}{100}\right)^2$$

$$= ₹ 16,000 \times \left(\frac{19}{20}\right)^2$$

$$= ₹ 16,000 \times \frac{19}{20} \times \frac{19}{20}$$

$$= ₹ 14,440 \text{ Ans.}$$

Q. 4. The cost of LED TV was ₹ 16,000 during 2018. In next year (2019), the price was hiked by 5%. In next year (2020), the cost was reduced by 4%. What is cost of LED TV in 2020 ?

Solution. The cost of LED TV in 2018 (P)

$$= ₹ 16,000$$

Rate of increase in 2019 (R_1) = 5% per annum

Rate of decrease in 2020 (R_2)

$$= 4% \text{ per annum}$$

Rate of LED TV after two years

$$= P \left(1 + \frac{R_1}{100}\right) \left(1 - \frac{R_2}{100}\right)$$

$$= ₹ 16,000 \left(1 + \frac{5}{100}\right) \left(1 - \frac{4}{100}\right)$$

$$= ₹ 16,000 \left(\frac{105}{100}\right) \left(\frac{96}{100}\right)$$

$$= ₹ 16,000 \times \frac{21}{20} \times \frac{24}{25}$$

$$= ₹ 16128 \text{ Ans.}$$

Q. 5. Population of town is 1,50,000. The annual birth rate is 5% and mortality rate is 3%. Find the population after 2 years.

Solution. Population of town = 1,50,000

Birth rate (R_1) = 5% per annum

Mortality rate (R_2) = 3% per annum

Time (T) = 2 years

Population after 2 years

$$= P \left(1 + \frac{R_1}{100} \right) \left(1 - \frac{R_2}{100} \right)$$

$$= 1,50,000 \left(1 + \frac{5}{100} \right) \left(1 - \frac{3}{100} \right)$$

$$= 1,50,000 \times \frac{105}{100} \times \frac{97}{100}$$

$$= 1,50,000 \times \frac{21}{20} \times \frac{97}{100}$$

$$= 1,52,775 \text{ Ans.}$$

TEXT BOOK EXERCISE 7.8