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CSIT-E

PME ASSIGNMENT

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Q1. Mr. Shyama who is just 50 yrs. old now is planning for (a) his retirement. He plans to invest an equal sum of ₹7000 at end of each year for next 12 yrs. the bank gives 10% interest rate compounded annually. Find the maturity value of his investment when he is 62 years old.

$$P = ₹7000, \quad t = 12 \text{ years}, \quad r = 10\% = 0.10$$

$$\begin{aligned} \text{Maturity value} &= P \times \left\{ \frac{(1+r)^t - 1}{r} \right\} \\ &= 7000 \times \left(\frac{(1+0.1)^{12} - 1}{0.1} \right) \\ &= 7000 \times 21.3843 \\ &= 1,49,689.9864 \\ &\quad \underline{\quad 0 \quad} \end{aligned}$$

(b) Hero motors takes a loan from SBI Khubaneswar branch in 2022 March, amounting ₹80,00,000 to purchase a production plant, at an interest rate of 8% compounded annually. the company wants to repay the loan amount in 10 yrs. equal instalments. Find instalment amount that the company has to pay to bank.

$$P = ₹80,00,000, \quad r = 8\% = 0.08, \quad n = 10 \text{ yrs.}$$

$$\begin{aligned} A &= \frac{P \cdot r \cdot (1+i)^n}{(1+i)^n - 1} = \frac{80,00,000 \times 0.08 \times (1.08)^{10}}{(1.08)^{10} - 1} \\ &= 11,92,235.90 \\ &\quad \underline{\quad 0 \quad} \end{aligned}$$

(c) If Rudra invest ₹1,00,000 in his manufacturing unit today, at end of 6th year he will earn ₹1,50,000. Alternatively, he can invest the same, i.e., ₹1,00,000 in a year fixed deposit in banks today where he can earn 6% interest rate compounded annually. As an Economist, suggest which investment proposal Rudra will accept. Use future worth comparison method to justify.

Ans(c)

Case I: $P = ₹1,00,000$
 $F = ₹1,50,000$

Case II: $P = ₹1,00,000$
 $t = 6 \text{ years}, r = 6\% = 0.06$
 $F = P(1+r)^t$
 $= 100000(1.06)^6$
 $= ₹1,41,851.9112$

Rudra is getting more return in case I i.e., by investing in manufacturing unit. I would ~~invest~~ suggest him to invest his money there rather than depositing in banks.

Q2. (a) In which situation one person is said to be unemployed? Discuss diff. types of unemployment.

Ans(a) Unemployment is a situation in which able-bodied persons in the age group of 16 or above are willing to work at a prevailing wage rate, don't find the job.

There are 3 types of unemployment :-

(1) Frictional unemployment: The ^{un}employment that occurs due to moving of people or changing occupation. It is temporary unemployment.

(ii) Structural unemployment - unemployment arising from technical change such as automation, or from changes in composition of output due to variation in the types of product people demand.

(iii) Cyclic unemployment - The unemployment in which workers losing their jobs due to short-run fluctuation in output as it cycles through boom & recessions over time.

(b) What are 3 categories into which the ILS, USA divides the ~~active~~ adult population? How does the ILS compute the labour force, labour force participation rate, & unemployment rate.

Ans (b) ILS divides adult populations into 3 categories -

(a) employed: category includes those whose worked as paid employees, worked in their own business, or worked as unpaid worker in a family members business.

(b) unemployed: category includes those who were not employed, but were available for work & tried to find job during previous 4-weeks.

(c) Not in labour force: everyone else not included in first two categories.

$$\Rightarrow \text{labour force} = \text{no. of person} + \text{no. of person} \\ \text{employed} \quad \text{unemployed}$$

$$\Rightarrow \text{labour force participation} = \frac{\text{labour force}}{\text{adult population}} \times 100$$

$$\Rightarrow \text{unemployment rate} = \frac{\text{no. of person unemployed}}{\text{labour force}} \times 100$$

(c) The following statistics relate to hypothetical economy for the year 2022. No. of persons employed = 4000, No. of persons unemployed = 400, No. of persons not in labour force = 600. Compute (i) Adult Population (ii) Labour force (iii) Unemployment rate (iv) Labour force participation rate.

$$\begin{aligned}\text{(i) Adult Population} &= 4000 + 400 + 600 \\ &= \underline{5000}\end{aligned}$$

$$\begin{aligned}\text{(ii) Labour force} &= 4000 + 400 \\ &= \underline{4400}\end{aligned}$$

$$\begin{aligned}\text{(iii) Unemployment rate} &= \frac{400}{4400} \times 100 \\ &= \underline{9.09\%}.\end{aligned}$$

$$\begin{aligned}\text{(iv) Labour force participation rate} &= \frac{4400}{5000} \times 100 \\ &= \underline{88\%}.\end{aligned}$$