B. Tech-3rd

Engineering Economics

Full Marks : 50

Time : $2\frac{1}{2}$ hours

Answer **all** questions

The figures in the right-hand margin indicate marks

Symbols carry usual meaning

Any supplementary materials to be provided

1. Answer *all* questions : 2 × 5

   (a) What are the factors which influence the price elasticity of demand ?

   (b) Define St. Petersburg paradox, and why is it significant in utility theory ?

   (c) What is meant by "returns to scale" ? Provide examples.

(d) Define the concept of "store of value" as a function of money.

(e) What is the difference between present worth and future worth in capital budgeting ?

2. (a) Illustrate the concepts of demand and supply with suitable diagrams. Discuss the factors that cause shifts in demand and supply curves and how do these shifts impact market equilibrium ? 8

Or

(b) Explain national income identities for both closed and open economies. How do national income components such as consumption (C) , investment (I), government expenditure (G), and net exports (X-M) contribute to the overall economic performance of a country ? 8

3. (a) An individual with a moderate income is found to purchase both lottery tickets (a risky investment) and life insurance (a risk-averse investment). Discuss how this behavior can be explained by the Friedman-Savage hypothesis. 8

Or

(b) A consumer's budget is Rs. 60 and who allocates income between two goods : apples (priced at Rs. 2 per unit) and oranges (priced at Rs. 3 per unit). If the consumer initially buys 10 apples and 10 organes, determine whether this is an equilibrium position using the principle of equimarginal utility. If the price of organes falls to Rs. 2, show how the consumer's budget line will change and how the new equilibrium is determined. 8

4. (a) What are the key characteristics of perfect competition ? Explain how price and output are determined in both the short run and the long run in a perfectly competitive market. How does the adjustment process ensure that firms earn only normal profits in the long run ? 8

Or

(b) Differentiate between the short-run and long-run production functions. Discuss the law of variable proportions and its stages ? Illustrate your answer with a real-world example of a firm. 8

5. (a) Explain the Fisher's Quantity theory of money. 8

Or

(b) Discuss the role of central bank in a country. Suggest measures for effective role of central bank in overall development of the economy. 8

6. (a) A company is evaluating three different investment projects (X, Y, and Z) with the following details :

1. Project X : Initial investment of Rs. 100,000; expected cash inflow of Rs. 30,000 per year for 5 years.

2. Project Y : Initial investment of Rs. 120,000; expected cash inflow of Rs. 35,000 per year for 5 years.

3. Project Z : Initial investment of Rs. 80,000; expected cash inflow of Rs. 25,000 per year for 5 years.

Calculate the NPV and IRR for each project using a discount rate of 7%. Which project should the company choose based on your analysis ? 8

Or

(b) Discuss the concept of time value of money (TVM) and its significance in capital budgeting and investment analysis. Explain the purpose and construction of cash flow diagrams in the context of capital budgeting. How do cash flow diagrams help in visualizing the timing and magnitude of cash inflows and outflows ? 8

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