

ANSWER ANY FIVE QUESTIONS. ONLY THE FIRST FIVE ANSWERED QUESTIONS SHALL BE EXAMINED; THE REST SHALL BE IGNORED.

1. A) Why is the integration of economic principles crucial in the field of engineering? Provide a comprehensive discussion on how Engineering Economics enhances decision-making in engineering projects.

B) Evaluate the role of scarcity and opportunity cost in want satisfaction. How do these economic principles shape decision-making at both individual and societal levels?

C) Assess the core principles of laissez-faire economics in the context of resource planning. How does the philosophy rely on decentralized decision-making and market mechanisms to allocate resources efficiently?

7+6+7
2. A) Write briefly about the Cobb-Douglas production function.

B) The production function for the gears of MECHANICA, Inc., is given by $Q = 60K^{0.5}L^{0.5}$, where Q is the number of laptops produced per day, K is hours of machine time, and L is hours of labor input. MECHANICA's competitor, AUTOMATE, Inc., is using the production function $Q = 60K^{0.7}L^{0.3}$.
i) If both companies use the same amounts of capital and labor, which will generate more output?
ii) Assume that capital is limited to 8 machine hours but labor is unlimited in supply. In which company is the marginal product of labor greater? Explain.

C) Assume a box manufacturer is producing in the short run when equipment is fixed. The manufacturer recognizes that as the number of labourers used in the production process increases from 1 to 8, the number of chairs produced changes as follows: 11, 24, 39, 49, 58, 69, 78, 86. Calculate the marginal and average product of labour for this production function. Plot the results graphically.

4+ (4+4)+(4+4)
3. A) What factors can influence the demand for a product? Provide examples and explain how they affect demand.

B) Describe the concept of cross-price elasticity of demand. Provide an example of substitute goods and another example of complementary goods.

C) For a product, the price was decreased from Rs 90 per unit to Rs 81 to attract more customers. It was perceived that demand for the product subsequently expanded from 120 to 140 units. Calculate the price elasticity of demand.

D) You decide to put \$10,000 in a money market fund that pays interest at the annual rate of 8.4%, compounding it monthly. You plan to take the money out after one year and pay the income tax on the interest earned. You are in the 12% tax bracket. Find the total amount available to you after taxes.

5+4+5+6
4. A) Explain the relationship between inflation and the time value of money. How does the purchasing power of money change during inflationary periods?

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B) Explore the Phillips Curve and its implications for the trade-off between inflation and unemployment.

C) Explain the Quantity Theory of Money and its key components.

D) ABC Manufacturing Ltd. approaches XYZ Bank for a term loan of \$500,000 to expand its production capacity. The bank offers an interest rate of 8% per annum for a tenure of 5 years. Calculate the total interest payable and the monthly instalment using the simple interest method.

6+6+5+3

5. A) Explain the role of commercial banks in industrial development and the economy. How do they facilitate the growth of industries through financial services?

B) Explain the role of the Reserve Bank of India in maintaining financial stability. How does the RBI address systemic risks and financial crises in the country?

C) Discuss the key features and benefits of a joint-stock company. Provide an example of a successful joint-stock company and its impact on the market.

D) Explain how the basic principles of management contribute to effective financial decision-making in organizations.

E) Write short notes on Mergers and Acquisitions.

4+4+4+4+4

6. A) Create journal entries for the following transactions:
i) Purchased raw materials on credit for \$5,000.
ii) Sold finished goods for cash, realizing \$8,000 in revenue.

B) Develop a simple Trading Account for a company with the following information:

- Opening Stock: \$8,000
- Purchases: \$25,000
- Sales: \$40,000
- Closing Stock: \$10,000

C) ABC Ltd. has the following balances on December 31, 2023:

- Capital: \$120,000
- Drawings: \$10,000
- Purchases: \$60,000
- Sales: \$90,000
- Salaries: \$18,000
- Rent: \$3,000
- Carriage Inwards: \$1,500
- Carriage Outwards: \$1,000
- Discount Allowed: \$2,000
- Discount Received: \$1,200
- Returns Inward: \$5,000
- Returns Outward: \$3,000
- Bad Debts: \$1,500
- Opening Stock: \$15,000
- Debtors: \$20,000
- Creditors: \$8,000
- Cash: \$4,000
- Bank: \$6,000

Calculate the Net Profit and determine the closing capital for the year.

4+6+(5+5)

7. A) XYZ Industries pays its employees an average hourly wage of \$20, and the total number of hours worked during the year is 50,000. Additionally, \$5,000 is spent on overtime pay and \$10,000 on employee benefits. Calculate the total labour cost.

B) You are a financial analyst tasked with evaluating three potential investment projects for your company. The projects are as follows:

- i) Project Alpha requires an initial investment of \$500,000 and is expected to generate cash flows of \$200,000 per year for the next 5 years.
- ii) Project Beta requires an initial investment of \$800,000 and is expected to generate cash flows of \$300,000 per year for the next 7 years.
- iii) Project Gamma requires an initial investment of \$1,000,000 and is expected to generate cash flows of \$400,000 per year for the next 10 years.

Assuming a discount rate of 10%:

- i) Calculate the NPV of each project.
- ii) Prioritize the projects according to their NPVs.

C) ABC Manufacturing Company provides you with the following financial information for the year ended December 31, 2023:

Total Assets: \$5,000,000
 Total Liabilities: \$2,000,000
 Net Sales: \$10,000,000
 Cost of Goods Sold (COGS): \$5,000,000
 Operating Expenses: \$2,000,000
 Interest Expense: \$100,000
 Income Tax Expense: \$500,000
 Average Inventory: \$1,000,000
 Average Accounts Receivable: \$800,000
 Average Accounts Payable: \$600,000
 Average Total Equity: \$3,000,000

Using the provided information, calculate the following ratios:

- i) Current Ratio
- ii) Quick Ratio
- iii) Gross Profit Margin
- iv) Net Profit Margin

$$2 + (3+3) + (3+3+3+3)$$

8. Write short notes on any four of the following topics:

- i) The Concept of Optimum in Factors of Production
- ii) Demand Estimation
- iii) The Causes and Consequences of Inflation
- iv) Importance of Credit in Industrial Functioning
- v) Influence of Artificial Intelligence (AI) and Big Data in Banking
- vi) Proprietorship in Business Organization
- vii) Impact of Taxation and Insurance in Industrial Operations.