Ref. No.: Ex/ME(M2)/HS/B/T/421/2024

B.E. MECHANICAL ENGINEERING FOURTH YEAR SECOND SEMESTER EXAM 2024

ENGINEERING ECONOMICS AND COSTING

Time: 3hrs Full Marks: 100

(Answer question no. 1 and any four from the rest)

(Parts of each question must be answered together in same place)

(Do not attempt extra question, which will not be evaluated)

(Assume data if missing)

1. Answer any six (06):
   a) Distinguish between microeconomics and macroeconomics. What are the three central problems of an economy? - Explain.
   b) Why the production possibility curve is downward sloping from left to right?
   c) Define marginal utility. State the law of diminishing marginal utility.
   d) Define price elasticity, income elasticity and cross elasticity of demand.
   e) Explain AFC, AVC, ATC and MC of production with the help of a graph.
   f) Prove that MR will be always below of AR line.
   g) How price is determined in a perfectly competitive market?
   h) How do you measure point elasticity of demand?
   i) Establish relationship between slope of demand curve and

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elasticity of demand.

j) Define economic territory. Mention the establishments, which do not belong to the domestic territory. Define normal resident.

k) What are the phases of circular flow economy? What is 3-sector economy?

6x6=36

2. a) What are the steps to adjust the inflation?

b) A company is trying to diversify its business in a new product line. The life of the project is 10 years with no salvage value at the end of its life. The initial outlay of the project is Rs. 20,00,000. The annual net profit is Rs. 3,50,000. Find the rate of return for the new business.

5+11=16

3. a) What are the functions and decisions of inventory? What are the different models of inventory?

b) Krishna Industry needs 24,000 units/year of a bought-out component, which will be used in its main product. The ordering cost is Rs.150 per order and the carrying cost per unit per year is 18% of the purchase price per unit. The purchase price per unit is Rs. 75. Find

(a) Economic order quantity

(b) No. of orders per year

(c) Time between successive orders

5+11=16

4. a) What are the seven types of investment modes?

Mar 3, 2024	Mr. Shyam sold finished goods to Mr. Raman of Rs. 40,000/-
Mar 8, 2024	Mr. Shyam paid salary to his employees of Rs. 5000/-
Mar 9, 2024	Mr. Shyam paid Rs. 2,000/- electric bill to CESC

4+6+6=16

6. a) Write down the expression for future worth of revenue dominated cash flow diagram.

   b) M/S Krishna Castings Ltd. is planning to replace its annealing furnace. It has received tenders from three different original manufacturers of annealing furnace. The details are as follows.

	Manufacturer/s		
	1	2	3
Initial cost (Rs.)	80,00,000	70,00,000	90,00,000
Years of service life	12	14	16
Annual opertn. & maint. cost (Rs.)	8,00,000	9,00,000	8,50,000
Salvage value after yrs. of service	5,00,000	4,00,000	7,00,000

   Which is the best alternative based on future worth method at i = 20%?

5+11=16

7. Journalize the following transactions, post them into Ledgers and complete the Trial Balance as on 31st March, 2024.

Jan 1, 2024	Mr. Shyam started business with Rs. 55,000/- as capital
Jan 2, 2024	Mr. Shyam sent Rs. 20,000/- to bank
Feb 15, 2024	Mr. Shyam purchased raw goods from Mr. Jatin of Rs. 30,000/-

   b) An engineer has two bids for an elevator to be installed in a new building. The details of the bids for the elevators are as follows:

Bid	Engineer's estimates		
	Initial cost (Rs.)	Service life (yrs.)	Annual opertn. & Maint. cost (Rs.)
Alpha Inc.	4,50,000	15	27,000
Beta Inc.	5,40,000	18	28,500

   Determine which bid should be accepted, based on the present worth method of comparison assuming 15% interest rate, compounded annually?

5+11=16

5. a) What are the methods for accounting the depreciation?

   b) A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 20,000. Determine the depreciation charge and book value at the end of various years using the straight-line method of depreciation. Also, calculate the depreciation and the book value for period 5 using the declining balance method of depreciation by assuming 0.2 for K.

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