Register No: …… Name: .....

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2024

B.Tech Chemical Engineering

(2020 SCHEME)

Course Code : 20CHT414

Course Name : Economics and Management of Chemical Industries

Max. Marks : 100 **Duration:3 Hours**

Scientific calculator and statistical table is allowed in the examination hall.

PART A

(Answer all questions. Each question carries 3 marks)

1. What is depreciation? What are the causes of depreciation?
2. Explain the procedure for the calculation of depreciation by sum of years digit method.
3. List out the different cost estimation techniques.
4. Explain the various elements of complete cost of a plant.
5. What is NPV?
6. What is Return on Investment?
7. Derive an expression for breakeven point.
8. What is the effect of inflation on the cost analysis?
9. List out any three financial ratios used for the analysis in the profit and loss account statement.
10. Differentiate between profit and loss accound statement and balance sheet.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) A heat exchanger has been designed for use in a chemical plant. A standard type heat exchanger with a negligible scrap value costs Rs.50000 will have a useful life of 6 years. Another exchanger of equivalent capacity with Rs.85000 have a scrap value of Rs.10000 and useful life of 10 years. Assuming a compound interest rate of 12% per year. Determine which is cheaper by comparing Unacost and Capitalized cost? 8

b) A machine has Rs.330000 book value, Rs.30000 salvage value and 3 years of life remaining. It is being depreciated by straight line method. If abandoned it can be taken as immediate loss on disposal at a 34 % tax rate. If the money is worth 10 % per year what will be the present worth of tax benefits by abandoning now. 6

OR

12. a) Two pipes are available for carrying water with costs as follows: 10

	A	B
First cost, Rs	500000	900000
Annual end of year cost, Rs/Year	100000	90000
Salvage value, Rs	0	0
Life, Yrs	10	15

Type A must be repaired at times and water can get contaminated at this time. Type B contamination is negligible. If money is worth 6% per year, how much benefit must be given to type B to make it economically equal to A.

b) Explain the sinking fund method for the calculation of depreciation. 4

MODULE II

13. a) A fertilizer company having a capacity of 1200 tonnes per day cost 62M$ for the complete construction in 2000 at Canada. Estimate the cost of an identically designed plant having 1800 tonnes per day capacity plant in India in 2023. 8
(given data: chemical engineering plant cost indices are 730 and 958 in 2000 and 2023, Location Index of Canada - 0.62)
b) Write short note on Cost indices. 6

OR

14. Discuss different techniques of Cost estimation. 14

MODULE III

15. A company has two proposals A and B which would require an initial investment of Rs. 24,000 and Rs. 21312 respectively. 14

Year	1	2	3	4
Proposal A	20000	2000	2000	4000
Proposal B	4000	2000	2000	19000

Which of those proposals should be selected following DCFRR method?

OR

16. Explain the given mathematical methods for profitability evaluation in detail. 14
a. Payback time b. RAI c. Internal Rate of Return d. ROI

MODULE IV

17. a) Discuss the use of economic production chart for break even analysis. Explain the economic production chart for 100% capacity with a neat diagram? 10
b) Explain the effect of inflation and unaburden in the cost analysis. 4

OR

18. a) An industry can produce 15000 units per year at 100% capacity. The variable cost per unit is Rs 4.3 per unit upto 100% capacity and 5.3 per unit for above 100% capacity. The fixed costs are Rs 12000 per year. The units are sold at a net selling price of Rs.6.25 per unit upto 90% capacity. If the company is running with a 125% capacity, how much should be charged for additional units to receive an excess aomunt of Rs.2500 profit after taxes. (Assume tax rate is 55%). 9
b) Derive an expression for breakeven point with the help of an economic production chart. 5

MODULE V

19. a) Describe the main components of a balance sheet. What are assets and liabilities and how are they categorized? 7
b) Explain how the information from the trial balance is used for preparing the balance sheet and income statement? Explain the relationship between the trial balance and financial statements. 7

OR

20. From the following particulars, prepare a balance sheet as on 31st March 2019. Capital-40,000, Loan to Mr. Kumar -5,000, Premises-50,000, Investments-3,000, Furniture and fixtures-7,500, Cash in hand-250, Bills receivable-3,500, Cash at bank-3,450, Bills payable-12,500, Drawings-3,000, Sundry debtors-21,000, Net profit-39,900, Sundry creditors-14,800, Closing stock-7,000, Machinery-3,500 14

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