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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E. **Semester: VI**
Branch: Chemical Engineering **Duration: 3 hrs.**
Course Code: 19CH6HSEIE **Max Marks: 100**
Course: Economics in Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

1 a) There is a proposal to start cement industry in Bengaluru city, will it be feasible? Justify. **10**

b) Define plant layout and list the main objects of a scientific layout. Explain the various factors to be considered for plant layout. **10**

UNIT - II

2 a) Compare different types of cost estimate for a project. **10**

b) Explain fixed and variable over heads. **06**

c) A bulb manufacturing unit produces 150 bulbs per day. The direct material cost is Rs 250/-, labour cost is Rs 200/-, factory cost is Rs 225/-, and selling cost is 30% of the factory cost. Management wants make profit of 10% on selling price. Find the selling price of each bulb. **04**

UNIT - III

3 a) Explain the following. **08**

i) Present worth and Discount
ii) Nominal interest and Effective interest rate

b) A bond has a maturity value of Rs 1000/- and having compound interest 3%. Determine the following at a time of four years before the bond reaches maturity. **06**

i) Present worth
ii) Discount
iii) Compound interest rate which will be received by the purchaser if bond is purchased for Rs. 700/-
iv) Find the present worth where the nominal bond interest is 3% compounded continuously

c) Two machines each with service life of 5 years have the following cost comparison. If money is worth 8% per annum which machine is more economical. **06**

	Machine A	**Machine B**
Installed cost (Rs.)	2,50,000/-	1,50,000/-
Maintenance (Rs.)	20,000/-	30,000/-
Overhauling at the end of 3rd year (Rs.)	-	15,000/-
Salvage value (Rs.)	5000/-	-
Benefit from quality every year Rs./Yr.	5000/-	-

OR

4 a) Explain the continuous interest. **04**

b) Following details are available for two reactors. **06**

Item	**Reactor A (M.S.)**	**Reactor B (S.S.)**
Initial cost (Rs.)	5000/-	15000/-
Life (year)	3 years	?
Salvage value (Rs.)	0	0
Interest (%)	4	4

If the capitalized cost is same for both the reactors, what should be the service life of the reactor B?

c) The following table gives the comparative data for two alternative process. Using present worth analysis, suggest which process is more economical money is worth 30%. **10**

Item	**New process**	**Old process**
Initial cost	6000	3000
Salvage value	1500	500
Annual maintenance	1500	1250
Service life	9 years	6 years
By product	1500	1250

UNIT - IV

5 a) Briefly explain the following terms. **08**

i. Obsolesce
ii. Salvage value
iii. Book value
iv. Replacement value

b) Explain the double declining balance method to calculate the depreciation. **06**

c) A bulldozer is purchased for Rs. 80,000/-. Its estimated life is 10 years, and scrap value is Rs. 20,000. Depreciation charges are made according to double declining balance method. Calculate the depreciation charge and also, find the depreciation fund after 2 years. **06**

OR

6 a) Explain the following method used to calculate the depreciation charges. **08**

i) Sinking fund method
ii) Sum-of-the-years-digits-method

b) How taxes can be classified? Explain in brief. **06**

c) A chemical manufacturer buys an equipment for Rs. 10,00,000/- that has an estimated salvage value of Rs. 2,00,000/-. Service life is 10 years. Find the book value after 6 years by **06**

(i) Sinking fund method
(ii) Straight lime method .

UNIT – V

7 a) Discuss briefly about balance sheet, and its contents. **08**

b) With the help of break-even chart, explain the break-even point. **12**

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