

GBCS SCHEME

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18CH81

Eighth Semester B.E. Degree Examination, July/August 2022 Process Engineering Economics and Management

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- List the various factors to be considered in making a feasibility survey. (10 Marks)
 - Explain the factors considered during selection of a suitable location for chemical process plant. (10 Marks)

OR

- List the important factors to be considered during planning of a plant layout. (10 Marks)
 - Write a note on importance of material and energy balance calculations in process design and development. (10 Marks)

Module-2

- Explain the various components of fixed capital investment for a chemical plant. (10 Marks)
 - A pharmaceutical company manufactures 1000 samples per hour. The material cost is Rs.1000, labour cost is Rs.500 and the direct expense is Rs.200. The factory on cost is 150% of total labour cost. The office on-cost is 35% of the total factory cost. If the selling price is Rs.5.00. Calculate whether the management is going in loss or gain and by what amount? (10 Marks)

OR

- Explain the following simple interest, and compound interest. (04 Marks)
 - An equipment is purchased for Rs.25,000 in 2012. Estimate the cost in 2019 if cost index in 2012 is 125 and in 2019 is 200. (06 Marks)
 - Two machines have following data. Find out which machine is more economical by carrying out present worth analysis.

| Particulars | Machine A | Machine B |
|-------------------------|-----------|-----------|
| First cost | 6000 | 3000 |
| Annual maintenance cost | 2000 | 1000 |
| Salvage value | 1500 | 500 |
| Life (years) | 06 | 06 |
| By product cost | 1500 | 1250 |
| Interest | 30% | 30% |

(10 Marks)

Module-3

- What is depreciation? List types of depreciation. Explain any one type of depreciation in detail. (08 Marks)
 - List different methods of calculating depreciation. (04 Marks)
 - A reactor is purchased for Rs.50,000 and the assumed life is 10 years and scrap value is Rs.10,000. If the depreciation is charged by diminishing balance method, calculate the percentage by which the value of reactor is reducing every year and depreciation fund after 2 years. (08 Marks)

OR

- 6 a. Explain profitability evaluation techniques in detail. (10 Marks)
 b. A company estimates that it can increase its sales if it procures a new machine. The installed cost of the new machine is Rs.3,00,000 and the expenditure incurred would be Rs.1,75,000. The extra income is 75% and installed cost per year and salvage value after 12 years is expected to be 12.5% of installed cost. What is the rate of return? (10 Marks)

Module-4

- 7 a. Explain reasons for replacement of equipment. Mention different methods for replacement studies. (10 Marks)
 b. The following table is the data for two equipments, suggest whether to purchase the equipment or not?

| Existing equipment | Proposed equipment |
|--|--|
| <ul style="list-style-type: none"> • Market value = Rs.55,000 • Overhauling charges to make it work for next 5 years = Rs.20,000 • Resale value = Rs.30,000 • Maintenance cost = Rs.200 per year | <ul style="list-style-type: none"> • Installed cost = Rs.1,05,000 • Expected life = 15 years • Resale value = Rs.9000 • Maintenance cost per year = Rs.100 |

(10 Marks)

OR

- 8 a. Write a note on alternative investments and methods for analysis of alternate investments. (08 Marks)
 b. A company has 4 alternative designs and desires to select best among them. The company requires minimum 10% of rate of return on investment. The following information gives necessary data:

| Item (Rs.) | Design 1 | Design 2 | Design 3 | Design 4 |
|-------------------------|----------|----------|----------|----------|
| Total initial cost | 10,000 | 16,000 | 20,000 | 26,000 |
| Operating cost per year | 100 | 100 | 100 | 100 |
| Fixed charges | 2000 | 3200 | 4000 | 5200 |
| % of initial cost | 20% | 20% | 20% | 20% |
| Cash flow per year | 4100 | 6000 | 6900 | 8850 |

(12 Marks)

Module-5

- 9 a. Explain briefly break even chart, explaining in detail of its important components including functions and assumptions of breakeven chart. (10 Marks)
 b. Write a note on balance sheet and its importance. (10 Marks)

OR

- 10 a. Write a note on types of design reports. (10 Marks)
 b. Explain in brief the organization and the purpose of the report. (10 Marks)

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