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## Seventh Semester B.E. Degree Examination, Feb./Mar.2022

### Process Engineering & Plant Design

Time: 3 hrs.

Max. Marks: 100

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

#### Module-1

- 1 a. What is Process Engineering? Explain about process engineer's role in plant design. (06 Marks)
- b. Discuss about general considerations for a good plant design. (08 Marks)
- c. Write a note on practical considerations in design. (06 Marks)

OR

- 2 a. Write a note on engineering ethics to be considered for a design. (06 Marks)
- b. Explain about design database and its importance. (06 Marks)
- c. Describe about process creation, design and flow diagrams of a plant. (08 Marks)

#### Module-2

- 3 a. Write a detailed note on flow sheet synthesis procedure and its development. (06 Marks)
- b. Discuss about Input/Output structure in a flow sheet. (06 Marks)
- c. Discuss about function diagram. (08 Marks)

OR

- 4 a. Write a note on process flow sheet and algorithmic flow sheet generation. (08 Marks)
- b. Discuss about software structure and its capabilities. (06 Marks)
- c. Explain about selection and use of software in process design. (06 Marks)

#### Module-3

- 5 a. What is cost estimation? Explain about cash flow for industrial operations. (08 Marks)
- b. Discuss about factors affecting investment and production cost. (07 Marks)
- c. Write a note on capital investment. (05 Marks)

OR

- 6 a. Write a note on selection of materials for industrial equipments and its fabrication costs. (08 Marks)
- b. Discuss about factors contributing to corrosion. (05 Marks)
- c. Discuss about properties of materials of construction. (07 Marks)

#### Module-4

- 7 a. What is optimization? Define optimization problems. (06 Marks)
- b. Write a note on selecting objective and objective function. (08 Marks)
- c. Discuss about suboptimization. (06 Marks)

OR

- 8 a. Discuss in detail about problems in programming optimization. (10 Marks)
- b. Explain about applications of graphical and analytical methods of optimization. (10 Marks)

#### Module-5

- 9 a. Discuss about Newtonian and Non-Newtonian fluids under fluid transport system. (06 Marks)
- b. Write a note on frictional losses in pipelines. (06 Marks)
- c. Explain about piping system for fluid transport processes. (08 Marks)

OR

- 10 a. Discuss about compression and expansion of fluids in detail. (10 Marks)
- b. Write a note on storage and containment of fluids explaining design and equipments. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.