

Code No: RT32081

R13**SET - 1****III B. Tech II Semester Regular/Supplementary Examinations, April – 2018****PROCESS ENGINEERING ECONOMICS****(Chemical Engineering)**

Time: 3 hours

Maximum Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)2. Answering the question in **Part-A** is compulsory3. Answer any **THREE** Questions from **Part-B**

PART –A

- 1 a) If the amount of Rs. 20,000 invested earns interest @ 12% compounded annually for 7 years, what could be the final amount you receive after 7 years? [4M]
- b) Explain the term 'Depletion'. [3M]
- c) What are incremental costs? [3M]
- d) Mention any two disadvantages of the use of the net present value method for analyzing capital investment proposal for a chemical plant? [4M]
- e) Define Batch operations with Variable cycle time. [4M]
- f) Write a short note on non-repetitive operations. [4M]

PART –B

- 2 a) Discuss the significance of equivalence in economic decision making. [4M]
- b) Explain in detail the various equations for economic studies and their significance. [8M]
- c) Explain the concepts of interest and its relevance in calculating the value of money. [4M]
- 3 a) An asset with a first cost of Rs.1,00,000 is depreciated over 5 year period. It is expected to have Rs.10,000 salvage value at the end of 5 years. Using the straight line method, what is the book value at the end of year 2? [3M]
- b) What are the various sources of capital that can be considered in designing a process plant? [8M]
- c) What is balance sheet? Explain various components of balance sheet. [5M]
- 4 a) Consider the following financial data for an investment project: [8M]
- Required capital investment: \$200,000
 - Project service life: 5 years
 - Salvage value at the end of 5 years: \$50,000
 - Depreciation method for tax purposes: 5-year straight line method
 - Annual revenue: \$300,000
 - Annual O&M expenses (not including depreciation and interest): \$180,000
 - Required investment in working capital at $n = 0$ (which will be recovered in full at the end of project year): \$40,000
 - The income tax rate to use: 40%
- Determine the project cash flow at the end of year 5.
- b) Explain in detail about the fixed and variable costs. [8M]
- 5 a) Write about the economic considerations in economic vessel design. [8M]
- b) Determine the average rate of return for a project that is estimated to yield total income of Rs.2,46,000 over five years, has a cost of Rs. 4,20,000 and has a residual value of Rs.30,000. [4M]
- c) Define economic balance. [4M]

Code No: RT32081

R13

SET - 1

- 6 a) Explain how you estimate the reactor and catalyst costs for achieving economic balance. [8M]
b) Explain the continuous and semi continuous operations under cyclic operations. [8M]
- 7 a) State the significance of estimated annual returns in economic analysis of a proposal. [8M]
b) Explain the process inventory considerations for process engineering plants. [8M]

www.FirstRanker.com