

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2170503****Date:16/05/2019****Subject Name:Plant Design & Project Engineering****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss in brief role of a chemical engineer. **03**
(b) What is Pilot Plant? State the importance of pilot plant. **04**
(c) List types of flow diagrams and explain each with a neat sketch. **07**

- Q.2** (a) Draw a typical master plot plan of an industry. **03**
(b) State and explain various factors for techno-economic feasibility survey of a Chemical process plant. **04**
(c) Discuss Importance of utilities in chemical industry. **07**

OR

- (c) Define layout of a plant. Discuss the principles of the storage layout and equipment lay-out in a process plant. **07**

- Q.3** (a) Define: (1) Salvage value (2) Book value (3) Market Value **03**
(b) Explain: (1) Battery limit (2) Grass Root Plant. **04**
(c) State and discuss the factors to be considered in selection of the location of a chemical plant. **07**

OR

- Q.3** (a) Write short note on pipe fittings **03**
(b) Differentiate between Standard and Special equipment. **04**
(c) What is optimum design? Explain “breakeven chart” for production schedule and its significance for optimum analysis. **07**

- Q.4** (a) Discuss selection of size reduction equipment. **03**
(b) Write a brief note on ‘Unit area concept’. **04**
(c) Discuss various waste treatment and disposal methods. **07**

OR

- Q.4** (a) The capital cost of a 9 million tones per annum refinery is estimated at Rs.320 crores in 1996 when cost index is 250.What would have been cost of 6 million tones per annum refinery in 1992 when cost index was 200. **03**
(b) Explain in brief the factors affecting investment and production cost. **04**

- (c) What are the various stages of process development of a chemical plant? **07**
- Q.5** (a) Define depreciation. List methods for determining depreciation. **03**
- (b) Enlist various methods of Profitability Analysis. Explain any One. **04**
- (c) Explain the cash flow diagram for an industrial plant. **07**

OR

- Q.5** (a) Write short note on PERT. **03**
- (b) Compare PERT & CPM **04**
- (c) The original value of a piece of equipment is 1,15,00,000 completely installed and ready for use. Its salvage value is estimated to be 15,00,000 at the end of a service life estimated to be 15 years. Determine the asset (or book) value of the equipment at the end of 8 years using straight line, decline balance and Double decline method. **07**

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