

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**DIPLOMA ENGINEERING – SEMESTER –VI • EXAMINATION – SUMMER- 2017**

**Subject Code: 3360502****Date:04-05-2017****Subject Name: Chemical Engineering Plant Economics****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make Suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of programmable & Communication aids are strictly prohibited.
5. Use of only simple calculator is permitted in Mathematics.
6. English version is authentic.

- Q.1** Answer any seven out of ten. **14**
1. Define: Service life
  2. Define: Depreciation
  3. Define: Turn-over ratio
  4. List out quantitative flow diagrams.
  5. Give general equation for optimum design with two variables.
  6. Write down sixth-tenth factor rule.
  7. What are objectives of plant project?
  8. Discuss importance of costs in safety.
  9. Define: Schedule number
  10. What is zone selection?
- Q.2** (a) Write a short note on Basis for a good design. **03**
- OR
- (a) Write a short note on selection of process. **03**
- (b) Write a short note on Need for plant design. **03**
- OR
- (b) Justify the statement-“Plant design not only must be technically satisfactory but also must be economically viable.” **03**
- (c) Write a short note on Role of chemical Engineer. **04**
- OR
- (c) Discuss batch processing Vs continuous processing. **04**
- (d) Write a short note on Pilot plant. **04**
- OR
- (d) Write a short note on specification sheets. **04**
- Q.3** (a) Explain labor supply as a factor for plant location. **03**
- OR
- (a) Explain water supply as a factor for plant location. **03**
- (b) Explain waste disposal as a factor for plant location. **03**
- OR
- (b) Explain building layout as a factor for plant layout. **03**
- (c) “It is advisable to select standard equipment wherever possible”-Justify. **04**
- OR
- (c) Write a short note on selection of heat transfer equipment. **04**
- (d) Discuss principles of piping layout for support and maintenance. **04**
- OR

- (d) Discuss Factors governing selection of insulation. **04**
- Q.4** (a) Explain methods of plant layout. **03**
- OR
- (a) Explain storage layout as a factor for plant layout. **03**
- (b) Write a short note on optimum economic design. **04**
- OR
- (b) State types of cost indexes. Explain any one in detail. **04**
- (c) Discuss elements of cost considered under Total product cost. **07**
- Q.5** (a) Discuss about causes of depreciation. **04**
- (b) The original cost of property is Rs. 30000 and it is depreciated by 6% sinking fund method. What is the annual depreciation charge if the book value of property after 10 years is the same as if it had been depreciated at Rs. 2500 per year by Straight line method? **04**
- (c) The total cost of an operation varies with X and Y as follows: **03**
- $$C_T = 2.5X + \frac{12000}{XY} + 1.9Y + 10$$
- Determine the values of X and Y which will give the least total cost of operation.
- (d) State methods for determining depreciation. **03**

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