

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3150506****Date:03/02/2021****Subject Name:Chemical Process Plant Design & Economics****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define and explain cost index. Also, state its usefulness. **03**
 (b) What is a plant design project? Enlist the stages through which it moves to completion. **04**
 (c) With special reference to Break-even point, Explain the factors affecting the estimation of investment and production cost. **07**
- Q.2** (a) Discuss types of flow diagrams in brief. **03**
 (b) Write a note on types of valves and selection of valves. **04**
 (c) State and discuss the factors to be considered in selection of the location of a chemical plant. **07**
- Q.3** (a) Define the terms: i) Book value ii) Service life iii) Salvage value **03**
 (b) Explain types of depreciation according to their causes. **04**
 (c) List and explain the items to be considered in estimation of total product cost. **07**
- Q.4** (a) Mention various methods for estimating capital investment. **03**
 (b) List the items to be considered for estimating Fixed capital investment and working capital. **04**
 (c) The original investment for an asset was Rs. 500000 and the asset was assumed to have a service life of 12 years with Rs. 100000 salvage value at the end of the service life. After the asset has been in use for 5 years, the remaining service life and final salvage value are re-estimated at 10 years and Rs. 50000, respectively. Under these conditions, what is the depreciation cost during the sixth year of the total life if straight-line depreciation is used? **07**
- Q.5** (a) Discuss any three safety aspects to be considered in a chemical plant project. **03**
 (b) Differentiate between Standard and Special equipment. **04**
 (c) What is BAR chart? Explain planning of a project schedule using it. **07**
- Q.6** (a) Differentiate between continuous process and batch process **03**
 (b) Write a note on specification sheet of equipment. **04**
 (c) Compare CPM and PERT techniques of project management. **07**
- Q.7** (a) Explain Importance of utility in chemical industry. **03**
 (b) Write a short note on pipe fittings. **04**
 (c) Discuss various practical factors of alternative investment and replacement decision. **07**
- Q.8** (a) State various waste treatment and disposal methods. **03**
 (b) Explain the importance of laboratory development of Pilot plant. **04**
 (c) Enlist various methods of Profitability analysis .Explain any two methods in detail. **07**
