

GUJARAT TECHNOLOGICAL UNIVERSITY
DIPLOMA ENGINEERING – SEMESTER –VIII • EXAMINATION – SUMMER
2014

Subject Code: 385502**Date: 26/05/2014****Subject Name: Process Equipment Design****Time: 02:30 pm – 5:00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Each question carry equal marks (14 marks)

- Q.1** (a) State the General Design Procedure of Process Equipment. **07**
 (b) Classify & explain the metallic material used for process equipment. **07**
- Q.2** (a) Explain Selection criteria of material for Process Equipment. **07**
 (b) What is Rolling Contact bearing? Explain Advantages and Disadvantages of roller contact bearing. **07**
- OR
- (b) What is packaging and gasket? Explain with neat sketch. **07**
- Q.3** (a) Explain briefly classification of heat exchanger as per TEMA **07**
 (b) Explain mechanical design consideration for heat exchangers. **07**
- OR
- Q.3** (a) Explain briefly following terms with respect to heat exchanger. **07**
 1. Tube sheet 2. baffels. 3. Tie Rods. 4. Spacers. 5. Partial plate. 6. Inlet nozzle. 7. out let nozzle.
- (b) What is the minimum thickness required of cylinder shell with the following data. **07**
 I.D = 3500 mm
 Corrosion allowance = 5.0 mm
 Weld joint = Type 1, 100 % RT
 Design pressure = 2 MPA
 Design temperature = 250°C
 Material = SA 516 GR. 70
 Loads other than pressure = NIL
- Q.4** (a) Explain different types of jackets used in reaction vessel with neat sketch. **07**
 (b) Explain in briefly heating system in reaction vessel **07**
- OR
- Q.4** (a) Explain different types of evaporators. Explain multiple effect evaporators. **07**
 (b) Explain the design consideration of crystallizer. **07**
- Q.5** (a) Explain different types of internal used in distillation column with neat sketch. **07**
 (b) Explain following Auto Cad commands in tabulated form **07**
 Line, Circle, Erase, Rectangle, Trim, Offset, Stretch, Rotate, Fillet, Chamfer, Text, Dimension, Array, Layer

OR

- Q.5** (a) Explain piping and instrumentation diagram (P& ID) With neat sketch. **07**
(b) Explain safety measures to be taken for equipment used in process equipment design. **07**
