



ELECTIVE - II
Process Equipment Design
(New) (1312)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Solve **any two** subquestions from each question.
5. Draw neat diagram wherever necessary.
6. Assume suitable data, if necessary.
7. Use of calculator is allowed.
6. Use PSG design data book if necessary.

UNIT - I

1. a) Explain thermal stresses in cylindrical shell in details. **10**
- b) Explain design conditions and stresses in pressure vessels. **10**
- c) State how selection of material is done for pressure vessels. Also explain some materials used for pressure vessels. **10**

UNIT - II

2. a) Explain in details any two removable closures for high pressure vessel with neat sketch. **10**
- b) Write the design procedure for rectangular tank. **10**
- c) Explain constructional features for high pressure vessels. **10**

UNIT - III

3. a) Explain shell and tube heat exchanger in detail. **10**
- b) Explain Jacket Design with neat sketches for reaction vessels. **10**

- c) Write the design procedure for agitator shaft design considering torque and bending moment. **10**

UNIT - IV

4. a) Derive expressions for deflection & stresses in columns. **10**
b) What are different types of crystallizers ? Explain any two crystallizers. **10**
c) Explain entrainment separators. **10**

UNIT - V

5. a) Explain safety measures in equipment design. **10**
b) Explain vapour / gas liquid separators in details. **10**
c) What are the different pressure relief devices. Explain any one device in detail. **10**
