

3 Hours

Total Marks: 80

- NB: 1. Question number **one** is compulsory.
2. Attempt any three of the remaining questions.
3. Each question carries equal marks.
4. Figures to the right indicate marks.
5. Make suitable assumptions when required.

- Q1 Answer any four of the following 20 Marks**
- a) Explain various types of expansion joints with diagram
 - b) What type of stresses occur in piping system?
 - c) Explain the responsibilities of piping engineer.
 - d) Explain concept of vent and drain.
 - e) Explain the properties of cold insulation and hot insulation material
- Q2 10 Marks**
- a) What are the factors to be considered while preparing P& ID . Explain with respect to any process consisting reactor, distillation column, and Dryer
 - b) Explain Non Destructive Test for finding out defects in welding **10 Marks**
- Q3 10 Marks**
- a) Explain with neat diagram IRON –CARBIDE phase diagram **10 Marks**
 - b) Explain the role of piping engineer in design, fabrication, erection and commissioning of a chemical plant **10 Marks**
- Q4 10 Marks**
- a) Write short notes on ASME B 31.1 **10 Marks**
 - b) Write equation to calculate pressure drop, NPSH, Power requirement. What are the different energy losses takes place in piping system. **10 Marks**
- Q5 10 Marks**
- a) Explain different piping supports **10 Marks**
 - b) Explain any one type of valve in detail **10 Marks**
- Q6 20 Marks**
- Write short notes on
- Desirable properties of piping materials
 - Y type strainer
 - Flame arrester
 - Inline Mixer and static mixer
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