

17457

15162

3 Hours / 100 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following: 20**
- a) Explain effect of design pressure and design temperature on design of pressure vessel.
 - b) Explain criteria for selection of material for hydrogen service.
 - c) What is dilation of pressure vessel? How it occurs?
 - d) Write general considerations for selection of material for Non corrosive service.
 - e) What is stress concentration factor? How it is taken care while design of welds?
 - f) Explain discontinuity stress in vessels with example.
 - g) Sketch filler weld, groove weld, plug weld joints and butt weld joints and draw its symbol.

P.T.O.

- 2. Attempt any TWO of the following: 16**
- a) Draw a neat sketch of any one type of pressure vessel and explain its terminology.
 - b) Explain various mountings and accessories used for pressure vessels with sketches.
 - c) Explain purpose of nozzle reinforcement. Draw its arrangement with neat sketch.
- 3. Attempt any TWO of the following: 16**
- a) Write factors governing nozzle placement and shape of nozzle, to minimize effect of stress concentration.
 - b) Explain fatigue concentration and stress concentration in circular and elliptical opening.
 - c) Explain support skirts and support lugs with sketches. State its importance.
- 4. Attempt any TWO of the following: 16**
- a) Explain wind load, piping load and its effect on pressure vessel.
 - b) Explain reinforced circular plates, staked plates and built up plates with sketches. Where they are useful?
 - c) Explain any two defects in welds. How NDT is useful for defect detection?
- 5. Attempt any TWO of the following: 16**
- a) Explain in brief -
 - (i) Method of attaching protective layers.
 - (ii) Use of stainless steel in pressure vessel fabrication.
 - b) Explain design procedure for thickness of shell and dish ends. Write formula and strength equations.
 - c) What is membrane stress? How it affects cylindrical shell and spherical shell?

6. Explain any FOUR of the following:**16**

- a) Ultra high pressure vessel and its design aspects.
 - b) Earthquake load and its effect on pressure vessel.
 - c) Ligament efficiency and its calculation.
 - d) Saddles and stiffeners (sketches).
 - e) Membrane stress in Semi ellipsoidal heads.
 - f) Deformation and stresses in flanges and flanged joints.
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