

22608

24225

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Attempt any FIVE of the following:** **10**
- a) Enlist any two object selecting methods.
 - b) Give any two grips editing commands used in CAD.
 - c) Give the necessity of pipe fitting in chemical industry.
 - d) Enlist the supports used for pipeline. (Any four points)
 - e) Name any two types of heads used in batch reactor.
 - f) Draw triangular tube sheet.
 - g) Draw IS 3232 symbols of :–
 - i) Ball Valve
 - ii) Centrifugal pump.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State and explain any two initial setting commands use in CAD.
 - b) State the procedure of any four modified command used in CAD.
 - c) State a neat sketch of a globe valve.
 - d) Draw a proportionate sketch of Angular skirt support.
- 3. Attempt any THREE of the following:** **12**
- a) Explain the fundamentals of computer aided drafting.
 - b) State the command prompts used to draw the batch reactor in sequential order.
 - c) Draw a proportionate diagram of elbow and bend.
 - d) Draw a proportionate diagram saddle support.
- 4. Attempt any THREE of the following:** **12**
- a) Draw a neat sketch of Union Joint.
 - b) Draw a neat proportionate drawing of a bracket support for vertical vessels.
 - c) Draw a neat and proportionate sketch of plain and half coil jacket for reactor.
 - d) Draw specification sheet for Batch reactor.
 - e) Draw a temperature control scheme for a heat exchanger.
- 5. Attempt any TWO of the following:** **12**
- a) Draw a neat proportionate drawing of Kettle type reboiler.
 - b) Absolute alcohol is obtained by carrying out the fractional distillation of 96% by weight ethyl alcohol. The fresh feed (ethyl alcohol) is fed to an azeotropic column where benzene is used as a azeotrope breaker. The ternary azeotrope of ethanol, benzene and water is formed as an overhead which is condensed and phase separation is achieved in a decanter. From the decanter, the benzene rich layer is recycled to azeotrope column as reflux and water rich layer is sent to a second fractionating column (a recovery column) where water is drained as a bottom. Almost ethanol + benzene is removed from the top of the recovery

column which is recycled to top of the azeotrope column. The bottom of azeotrope column gives almost pure ethanol (99.5%). Draw process flow diagram for this plant.

- c) Draw a utility line diagram for the process of azeotrope distillation for production of absolute alcohol given in Q. No. 5(b)

6. Attempt any TWO of the following:

12

- a) Draw a neat and proportionate sketch of jacketed batch reactor.
 - b) Draw piping and instrumentation diagram for the production of absolute alcohol by the process of azeotropic distillation given in Q. No. 5(b)
 - c) Draw the tank farm for the process of the production of absolute alcohol by the process of azeotropic distillation given in Q. No. 5(b)
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