

22231

21718

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 answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

- 1. Answer any FIVE of the following: **10****
- a) Define the following terms:
 - (i) Rate data
 - (ii) Chemical kinetics
 - b) Give the classification of chemical reactors.
 - c) List unsafe condition in a laboratory. (Any four points)
 - d) Draw hazards symbols for toxic and corrosive materials.
 - e) Define Molarity of solution.
 - f) State Daltons law.
 - g) Define pH of solution. What is scale for it.

P.T.O.

- 2. Answer any THREE of the following:** **12**
- a) Explain relation between chemistry and chemical engineering.
 - b) Draw a neat sketches of personal protective equipments.
(Any four)
 - c) How to measure the specific gravity of a liquid. Explain.
 - d) Write principle of conductivity meter and Abbes refractometer.
- 3. Answer any THREE of the following:** **12**
- a) Define temperature. Explain dry bulb temperature and wet bulb temperature.
 - b) An aqueous solution of sodium chloride is prepared by dissolving 10kg of sodium chloride in 50 kg of water find
 - (i) Weight %
 - (ii) Mole % of solution.[Atomic weight of Na = 23, Cl = 35.5]
 - c) Describe solubility and effect of temperature on solubility.
 - d) Describe importance of size reduction in chemical industry.
- 4. Answer any THREE of the following:** **12**
- a) Explain types of chemical industries on the basis of application.
 - b) Explain the importance of safety in chemical industry.
 - c) State the importance of emergency exist route and assembly point.
 - d) 20 gram of caustic soda are dissolved in water to prepare 500 ml of solution. Find the normality and molarity of solution.
 - e) Enlist different unit operations. Explain any one in details.

5. Answer any TWO of the following:**12**

- a) Describe application of pH measurement in industry. How pH affect the electrical conductivity.
- b) Draw symbol of
 - (i) Tray Dryer
 - (ii) Plate column
 - (iii) Packed column
 - (iv) Jaw crusher
 - (v) Strirrer
 - (vi) Ball mill.
- c) Explain following unit processes with suitable example.
 - (i) Sulphonation
 - (ii) Hydrogenation
 - (iii) Esterification

6. Answer any TWO of the following:**12**

- a) Explain Abbes Refractometer.
 - b) Explain Distillation and Leaching unit operation.
 - c) Draw a neat sketch of Electro-dialysis.
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