

# 22231

**21819**

**3 Hours / 70 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) 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) Define Reactor.
- b) Write the names of any 4 personal protective equipments.
- c) Define normality of solution.
- d) Define pH of solution
- e) Write down names of different unit operations (any four).
- f) State Dalton's Law.
- g) Define electrical conductivity and write its unit.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) Write the classification of chemical industry based on application.
  - b) Draw the symbols of following hazards:
    - (i) Bio-hazard
    - (ii) Toxic
    - (iii) Corrosive
    - (iv) Flammable.
  - c) Explain the method to measure specific gravity of any material using specific gravity bottle.
  - d) Describe conductivity meter.
- 3. Attempt any THREE of the following:** **12**
- a) Explain the following terms:
    - (i) Scale Up
    - (ii) Design
  - b) Write different causes of accidents in laboratories.
  - c) Write the formula for weight % and mole %.
  - d) Describe Refractive Index property of solution. Explain its dependence on composition and temperature.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the following terms:
    - (i) Dry Bulb Temperature
    - (ii) Wet Bulb Temperature.
  - b) Draw the symbols of following unit operations:
    - (i) Jaw crusher
    - (ii) Filtration
    - (iii) Ball mill
    - (iv) Pump

- c) Describe solubility saturation solubility. Write the effect of temperature on solubility.
- d) Explain following unit processes:
  - (i) Oxidation
  - (ii) Nitration.
- e) Write about emergency exit route and assembly point.

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

- a) Write the classification of unit operations and unit processes.
- b) Explain principle, construction and working of Abbe's Refractometer.
- c) Explain the following unit operations:
  - (i) Mixing
  - (ii) Drying
  - (iii) Evaporation
  - (iv) Absorption.

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

- a) Write the safety measure in the following accidental cases:
    - (i) Eye injury (chemical)
    - (ii) Burn
    - (iii) Skin contact
    - (iv) Inhalation of toxic fumes.
  - b) Explain electrostatic separation with a neat sketch.
  - c) Describe the following unit processes:
    - (i) Pyrolysis
    - (ii) Hydration
    - (iii) Hydrogenation.
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