

312341

12526

3 Hours / 70 Marks

Seat No.

| | | | | | | | |
|--|--|--|--|--|--|--|--|
| | | | | | | | |
|--|--|--|--|--|--|--|--|

-
- 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. Attempt any FIVE of the following :** **10**
- a) Give the names of any two chemicals manufactured by bulk industries.
- b) Define first-aid.
- c) Define Molarity and Molality.
- d) Define Density and specific gravity.
- e) Define Evaporation and give its example.
- f) Define corrosion.
- g) Define factor of safety.

P.T.O.

- 2. Attempt any THREE of the following : 12**
- a) Write in brief on history and evolution of chemical engineering.
 - b) Give the classification of fire and explain the standard method of using fire extinguisher.
 - c) Define pH and describe pH scale with examples.
 - d) Describe the separation by sedimentation.
- 3. Attempt any THREE of the following : 12**
- a) List job roles and job opportunities available to chemical engineers. (Any four each)
 - b) Explain first-aid measures in case of inhalation of toxic fumes.
 - c) 49 grams of sulfuric acid (H_2SO_4) are dissolved in water to prepare 500 ml of solution. Find the normality and molarity of the solution.
 - d) Write on importance of safety in a chemical laboratory.
- 4. Attempt any THREE of the following : 12**
- a) Differentiate between unit operations and unit process with examples. (Any four)
 - b) Explain oxidation process with suitable examples.
 - c) Air contains 21% O_2 and 79% N_2 by volume. Calculate the composition in terms of percent by weight.
 - d) Give the selection criteria of material of construction for chemical process plant.
 - e) Give any two properties and applications of carbon steel.

312341

[3]

Marks

5. Attempt any TWO of the following :

12

- a) Give the Description and applications of LDPE and HDPE.
- b) Explain the esterification process with example.
- c) A gas mixture contains 0.274 kmol of HCl, 0.337 kmol of N₂ and 0.089 kmol of O₂ at a total pressure of 405.3 kPa, Calculate –
 - i) Average molecular weight of gas and
 - ii) Volume occupied by this mixture of 405.3 kPa and 30.3 K.

6. Attempt any TWO of the following :

12

- a) A solution of caustic soda is prepared by adding 80 g NaOH to 1000 ml of water. Find the mole% and weight% NaOH in the final solution. Density of water is 1g/ml.
(At.wt.of Na = 23, O=16, H=1)
 - b) Describe the three modes of heat transfer with examples.
 - c) Differentiate between distillation and gas absorption with examples. (any six)
-