

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE – OCTOBER/NOVEMBER-2018.

FUNDAMENTALS OF CHEMICAL ENGINEERING

(Maximum Marks : 100)

Time : 3 Hrs

PART-A  
(Maximum marks: 10)

Marks

I. Answer all questions in one or two sentences. Each question carries 2 marks.

1. Name and location of two cement factories in India.
2. Define molarity.
3. List any two size reduction equipment used in industry.
4. Define cracking.
5. List any two temperature scale.

[5X2=10]

PART - B  
(Maximum Marks : 30)

II Answer any five of the following questions. Each question carries 6 marks.

1. 80 gm of sodium hydroxide (NaOH) are dissolved in water to prepare one liter of solution. Find normality and molarity of solution.
2. Identify the location of six major chemical industries in Kerala.
3. State the following:
  - (i) Drying
  - (ii) Crystallization
4. List the basic properties of fluid.
5. State about the following unit process.
  - (i) Nitration
  - (ii) Chlorination
6. List the pressure scales and units.
7. Draw and indicate the parts of a bourdon tube.

[5x6 =30]

PART - C  
(Maximum marks : 60)

(Answer one full question from each unit. Each full question carries 15 marks)

UNIT I

- III (a) A gas contained in a closed vessel at a pressure of 121.59kpa g and 299K (26°C) is heated to a temperature of 1273 K(1000°C) find the pressure to which a closed vessel should be designed.

(8)

(b) Distribute the duties and responsibilities of a chemical engineer. (7)

OR

IV (a) An aqueous solution of  $K_2CO_3$  is prepared by dissolving 43kg of  $K_2CO_3$  in 100kg of water at 293 K (20°C) calculate the molarity and molality of the solution. Density of the solution is 1.3kg/L. (8)

(b) List the product and raw materials of major industries. (7)

UNIT- II

V (a) Explain the methods of handling and storage of hazardous liquids. (8)

(b) Describe the process of extraction and leaching. (7)

OR

VI (a) State the following:  
(i) filtration

(ii) sedimentation

(2x4=8)

(b) Differentiate the process of centrifugation and mixing. (7)

UNIT- III

VII (a) State the process with an example

(i) sulphonation

(ii) polymerization

(2x4=8)

(b) Explain the process of hydrogenation (7)

OR

VIII (a) Discuss the following

(i) Hydration

(ii) Esterification

(2x4=8)

(b) Describe the process of saponification (7)

UNIT – IV

IX (a) Illustrate the working of bimetallic thermometer. (8)

(b) Explain air line respirator (7)

OR

X (a) Illustrate the working of redwood viscometer. (8)

(b) Explain the safety belt for industrial operation. (7)

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