TED (15) - 2071
(Revision 2015)

Reg.No. .....
Signature. .....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, OCTOBER 2017.

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 the two cement factories in Kerala.
2 Define molality.
3 List any two properties of fluid.
4 What is meant by hydrogenation?
5 List any two pressure measuring apparatus. (5x2=10)

PART - B

(maximum marks : 30)

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

1. Calculate the volume occupied by 20kg of Chlorine gas at a pressure of 100kpa and 298k (25°c). (6)
2. State the following
   (i) Dalton's law (3)
   (ii) Boyle's law (3)
3. Draw and indicate the parts of a heat exchanger. (6)
4. Define the following.
   (i) Sensible heat (3)
   (ii) Leaching (3)
5. State about the following unit process.
   (i) Polymerization (3)
   (ii) Chlorination (3)
6. Draw neat sketch of a Bourdon tube. (6)
7. List the scales of the following.
   (i) Temperature (3)
   (ii) Pressure (3)

PART - C

(Maximum marks : 60)

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

UNIT I

III (a) Do the following conversions
   (i) 294g/lit H_2SO_4 to normality. (4)

   (ii) 54.75g/lit HCL to molarity (4)

(b) A certain quantity of gas contained in a closed vessel of volume $1m^3$ at a temperature of 298K(25°C) and pressure of 131.7kPa is to be heated such that the pressure should not exceed 303Kpa. Calculate the temperature of gas attained. (7)

MA'DIN POLYTECHNIC COLLEGE

OR

IV (a) Describe the duties and responsibilities of a chemist. (7)
(b) State the principle of Economy in chemical industries. (4)
(c) Convert the following:-
(i) Convert the pressure of 2 atmosphere into millimeter of mercury. (2)
(ii) Convert the volumetric flow rate of $2m^3$/second to liter/seconds. (2)

UNIT- II

V (a) Give any two heat exchanging equipments and their use. (6)
(b) Define the following with an example:-
(i) Distillation (3)
(ii) Absorption (3)
(iii) Crystallization (3)

OR

VI (a) Illustrate the storage tanks used for the storage of acids with a sketch. (6)
(b) State the importance of the following operations:-
(i) Size separation (3)
(ii) Filtration (3)
(iii) Centrifugation (3)

UNIT- III

VII Describe flow diagram which represent the unit operation/process of a chemical industries. (7)
State the process with an example.
(i) sulphonation (4)
(ii) polymerization (4)

OR

VIII Define the following:
(i) Nitration (ii) Chlorination (iii) Reduction
(iv) Hydration (v) cracking. (3x5=15)

UNIT – IV

IX (a) Differentiate volumetric flow rate and mass flow rate. (4)
(b) List the pressure and area based flow measuring equipments. (4)
(c) Describe the measurement of temperature using bimetallic thermometer with a figure. (7)

OR

X (a) List the importance of personal protective equipments used in chemical Industries. (7)
(b) Illustrate about the following
(i)Bob and tape, float tape. (4)
(ii) Mercury expansion thermometer (4)

****

MA'RIN POLYTECHNIC COLLEGE