

FIRST SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY—OCTOBER, 2014

APPLIED SCIENCE—I (Chemistry)
(Common except DCP and CABM)

[Time : 1½ hours]

(Maximum marks : 50)

Marks

PART—A

(Maximum marks : 4)

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

(a) Write down the molecular formulae of the compounds.

(i) Stannous chloride (ii) Sodium carbonate

(b) Define parts per million.

(2×2=4)

PART—B

(Maximum marks : 16)

(Answer any two full questions. Each question carries 8 marks.)

II (a) What are the information given by a chemical equation ?

(b) Define conjugate acid-base pairs and give two examples.

III (a) Calculate the pH of 0.01M NaOH solution.

(b) What does it mean by nano size and give 3 examples for nano materials ?

IV (a) Give reason for :

Methyl orange is not a suitable indicator for the titration of NaOH
 $V_s H_2 C_2 O_4$

(b) Show the formation of the active species in the sterilization of water by bleaching powder using chemical equations.

(2×8=16)

PART—C

(Maximum marks : 30)

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

UNIT—I

V (a) How much amount of CO_2 is produced when 0.5g of $CaCO_3$ heated as per the equation $CaCO_3 \rightarrow CaO + CO_2$.

4

(b) Define equivalent weight of a base and calculate the equivalent weight of $Ca(OH)_2$ (atwt of Ca = 40).

4

(c) Define pH and give two applications.

3

(d) Howmuch amount of NaCl is present in 250ml of 0.25M NaCl solution.

4

OR

| | Marks |
|---|-------|
| VI (a) Define normality and give the relation between normality and molarity. | 4 |
| (b) Illustrate a redox reaction with a suitable example. | 4 |
| (c) Distinguish between atom and molecule. | 4 |
| (d) What happens to the ionic product of water at 298K by the addition of a small amount of acid ? Explain. | 3 |

UNIT—II

| | |
|--|---|
| VII (a) Draw the flow chart of the production of potable water. | 4 |
| (b) Name the methods for the synthesis of carbon nanotubes. | 3 |
| (c) Distinguish between hard water and soft water. | 4 |
| (d) What are the carbon nano tubes and how will you classify them based on the orientation of lattices ? | 4 |

OR

| | |
|--|---|
| VIII (a) Show the chemical changes happens on boiling water with temporary hardness. | 4 |
| (b) Explain the disadvantages of hard water. | 4 |
| (c) Write a note on plasma Process. | 4 |
| (d) Mention any three properties of carbon nanotubes. | 3 |