TED (15) – 2004

(REVISION — 2015)

Reg. No. ....

Signature ....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE —APRIL, 2019

ENGINEERING CHEMISTRY - II

[*Time* : 3 hours

(Maximum marks : 100)

PART — A
(Maximum marks : 10)

Marks

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

1. State Hund's rule of maximum multiplicity.

2. What are strong electrolytes and weak electrolytes ?

3. Give the functional group of
    (a) Ketone   (b) Alcohol

4. Define galvanization.

5. Define calorific value of fuel. $(5 \times 2 = 10)$

PART — B
(Maximum marks : 30)

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

1. (a) Explain hydrogen bonding with an example.
    (b) State Aufbau principle.

2. (a) What is a primary cell ? Give two examples.
    (b) State Faraday's first law of electrolysis.

3. (a) Reduction potentials of Zn and Ag electrodes are -0.76 V and 0.8 V respectively.
        (i)   Compute the emf if a cell is constructed using these electrodes.
        (ii) Which metal displaces the other from its salt solution ? Give reason.
    (b) Explain dry corrosion.

4. (a) Distinguish between organic and inorganic compounds.
    (b) Give monomer(s) of the following polymers.
        (i) PVC   (ii) Natural rubber

5. (a) What is catalytic cracking ? Mention any two advantages of it.
    (b) Give any two harmful effects of acids rain.

[9]

Marks

6. (a) What are the qualities of a good fuel ?

   (b) What are synthetic fuels ? Give one example.

7. (a) Give any two differences between addition polymerization and condensation polymerization.

   (b) Define polymerization. $(5 \times 6 = 30)$

PART — C

(Maximum marks : 60)

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

Unit — I

III (a) State Pauli's exclusion principle. Calculate the de-Broglie wave length for an electron moving with a velocity of 10^3 m s^{-1} (h=6.625 $\times$ 10^{-34} Kg m^{2}s^{-1}, m=9.1 $\times$ 10^{-31}Kg) 6

   (b) State octet rule. Explain the bond formation in NaCl. 5

   (c) What is a co-ordinate bond ? Give two examples. 4

Or

IV (a) State Heisenberg's uncertainty principle. Calculate the uncertainty in the velocity of an electron, if the uncertainty in position is 10^{-10}m. (h = 6.625 $\times$ 10^{-34} Kg m^2 s^{-1}, m$_e$= 9.1 $\times$ 10^{-31}Kg) 6

   (b) How is a covalent bond formed ? Give three examples. 5

   (c) Differentiate between orbit and orbital. 4

Unit — II

V (a) Explain the process of electrolysis by taking molten NaCl as an example. 6

   (b) What is a salt bridge ? Give the functions of salt bridge. 5

   (c) What are secondary cells ? Give two examples. 4

Or

VI (a) What are the factors that influence rate of corrosion ? Explain. 6

   (b) What is electrochemical theory of corrosion ? 5

   (c) How is corrosion prevented by cathodic protection method ? Explain. 4

Unit — III

VII (a) Distinguish between Thermoplastics and Thermosetting plastics. 6

   (b) What are refractories ? Give their functions. 5

   (c) Mention four characteristics of refractories. 4

Or

Marks

VIII (a) Define vulcanization ? Give any four properties of vulcanized rubber.   6

   (b) What is optical fibre ? Give three uses of it.   5

   (c) Explain homo polymer and co-polymer with one example for each.   4

Unit — IV

IX (a) Compare solid, liquid and gaseous fuels.   6

   (b) Define pollutant. Explain the major sources of water pollution.   5

   (c) What are primary fuels ? Give two examples.   4

Or

X (a) What do you understand by Green house effect ? What are its consequences ? Mention two ways to reduce it.   6

   (b) Give the major components present in the following fuels.

     (i) L P G   (iv) Water gas

     (ii) Producer gas   (v) CNG

     (iii) Natural gas   5

   (c) Write a short note on ozone layer depletion.   4

———