



TED (15) – 2004

Reg. No.....

(REVISION — 2015)

Signature

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/
TECHNOLOGY — MARCH, 2016

ENGINEERING CHEMISTRY - II

(Common to all branches except DCP and CABM)

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

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

1. H_2O is a liquid while H_2S is a gas. Give reason.
2. Give two examples each for electrolytes and non-electrolytes.
3. What is activity series ?
4. What are refractories ? Mention two uses.
5. Name the different regions of the atmosphere ?

(5×2=10)

PART — B

(Maximum marks : 30)

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

1. (a) State any four postulates of Bohr's atom model. 4
(b) Give the significance of principle quantum number. 2
2. (a) Draw a labelled figure for electroplating of nickel over steel spoon and give the electrode reactions. 4
(b) Arrange the following metals in the decreasing order of their reactivity. Al, Cu, Fe, Mg, Zn and K. 2
3. (a) What are saturated and unsaturated organic compounds ? Give an example for each and give one test to identify them. 4
(b) What is the role of sulphur in vulcanization of rubber ? 2
4. (a) Ordinary rain water is slightly acidic. When does it become acid rain and what are its threats ? 4
(b) How will you convert higher hydrocarbons into petrol. 2



- | | Marks |
|---|-------|
| 5 (a) What is the maximum number of electrons that can be accommodated in an orbital? Name and state the rule which governs this. | 4 |
| (b) The azimuthal quantum number of an orbital is 1. Name the orbital and what is its shape? | 2 |
| 6 (a) How is underground iron pipes protected from corrosion? Name the method and give the principle behind it? | 4 |
| (b) List any two applications of fuel cell. | 2 |
| 7 (a) Mention the monomers and any one use of the following polymers. | |
| (i) Nylon 6 (ii) Buna-N | 4 |
| (b) Name the raw materials used in the manufacture of ordinary glass and give one application. | 2 |

PART—C

(Maximum marks : 60)

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

UNIT—I

- III (a) Illustrate the formation of ionic bond and covalent bond with an example. 6
- (b) Write all quantum numbers of the electron present in outermost shell of potassium.
(At. No. = 19) 5
- (c) State Heisenberg's uncertainty principle. Give its mathematical expression and explain the terms. 4

OR

- IV (a) State Hund's rule of maximum multiplicity. Illustrate it taking nitrogen and neon as examples. 6
- (b) What do you mean by dual nature of matter? An electron is associated with a wavelength of 10nm. Calculate the velocity of the electron. ($h = 6.63 \times 10^{-34}$ JS, Mass of electron = 9.1×10^{-31} kg) 5
- (c) Bring out the differences between an orbit and an orbital. 4

UNIT—II

- V (a) What is electrolysis and state Faraday's laws of electrolysis. 6
- (b) What is rust and give its chemical formula? Write the conditions for rusting. 5
- (c) How will you represent Daniel cell? Write the electrode reactions and net cell reaction. 4

OR



- VI (a) A cell is constructed using Zn and Ag electrodes. Write
- (i) the electrode reactions
 - (ii) the net cell reaction
 - (iii) cell representation
 - (iv) compute the e.m.f. of the cell, given $E^0_{Zn^{2+}/Zn} = -0.76$ and $E^0_{Ag^+/Ag} = 0.80V$.
- (b) Give one example each for metallic and electrolytic conductors. What are the major differences between the two ?
- (c) Write the principle behind barrier protection and suggest any two methods for it.

UNIT—III

- VII (a) How are plastics classified based on their method of molding and applications and differentiate between them with one examples each.
- (b) Classify the following polymers into addition and condensation polymers.
- (i) Teflon
 - (ii) Bakelite
 - (iii) Buna-S
 - (iv) Neoprene
 - (v) Nylon 6,6
- (c) Compare organic and inorganic compounds.

OR

- VIII (a) How are polymers classified based on their structure ? Give one example for each.
- (b) What are functional groups ? Give the functional groups present in aldehydes, amines and esters ?
- (c) Write any four advantages of optical fibres.

UNIT—IV

- IX (a) What are fuels ? How are they classified based upon their physical state. Give two examples for each category.
- (b) What is greenhouse effect and give any three consequences.
- (c) Comment on the relevance of green chemistry in the present scenario.

OR

- X (a) What is smog ? Explain different types of smog.
- (b) Write the composition and preparation of water gas and producer gas.
- (c) What is soil pollution ? Give any three remedial measures.



<https://www.gptcthirurangadi.in>