



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 =  $9.1 \times 10^{-31}$  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  $E^0_{Ag^+/Ag} = 0.80V$ .
- 6

(b) Give one example each for metallic and electrolytic conductors. What are the major differences between the two ?

5

(c) Write the principle behind barrier protection and suggest any two methods for it.

4

UNIT—III

VII (a) How are plastics classified based on their method of molding and applications and differentiate between them with one examples each.

6

(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.

4

OR

VIII (a) How are polymers classified based on their structure ? Give one example for each.

6

(b) What are functional groups ? Give the functional groups present in aldehydes, amines and esters ?

5

(c) Write any four advantages of optical fibres.

4

UNIT—IV

IX (a) What are fuels ? How are they classified based upon their physical state. Give two examples for each category.

6

(b) What is greenhouse effect and give any three consequences.

5

(c) Comment on the relevance of green chemistry in the present scenario.

4

OR

X (a) What is smog ? Explain different types of smog.

6

(b) Write the composition and preparation of water gas and producer gas.

5

(c) What is soil pollution ? Give any three remedial measures.

4



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