TED (15) 2004 A

(Revision-2015)

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N20-00048

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER-2020

ENGINEERING CHEMISTRY-II

[Maximum marks: 75]   (Time: 2.15 Hours)

PART – A

(Answer any *three* questions in one or two sentences. Each question carries 2 marks)

I. (1). What information is provided by azimuthal quantum number?

(2). Write two applications of fuel cells.

(3). What are the monomers of Bakelite?

(4). Where is ozonosphere situated in the atmosphere?

(5). What is corrosion?   (3 x 2 = 6)

PART – B

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

II. (1). (a). List the important postulates of Bohr model of atom.

 (b). Write the correct set of quantum numbers for the electron with highest energy in

   sodium atom (Z = 11).   (4 + 2 = 6)

(2). (a). What is a fuel cell? What are the advantages of fuel cells?

 (b). Rusting of iron occurs much faster in salt water than in ordinary water. Explain. (4 + 2 = 6)

(3). (a). Write the monomers and uses of the polymers, polythene and teflon.

 (b). What is catenation?   (4 + 2 = 6)

(4). (a). What are the causes of air pollution and mention two air pollutants?

 (b). Mention two advantages of catalytic cracking.   (4 + 2 = 6)

(5). (a). How are covalent bonds formed. Give two examples.

 (b). Define an orbital.   (4 + 2 = 6)

(6). (a). List four measures which can be used to minimize air pollution.

 (b). Write the functional groups present in amides and esters.   (4 + 2 = 6)

(7). (a).What are galvanic cells?   How are galvanic cells classified.

 (b). What are the factors which favour rusting of iron?   (4 x 6= 24)

PART – C

(Answer *any of the three units* from the following. Each question carries 15 marks)

UNIT –I

III. (a). State de Broglie relationship. If the velocity of the electron in Bohr's first orbit is 2.19×10^6 ms^{-1}, calculate the de Broglie wavelength associated with it.
($h = 6.625 \times 10^{-34}$ kgm^{2}s^{-1}, $m = 9.1 \times 10^{-31}$ kg (5)

(b). What is meant by electronic configuration? Write the electronic configuration of elements with atomic numbers 15 and 16. (5)

(c). Draw the shapes of orbitals with (i) $I = 0$ (ii) $I = 1$. Which scientific principle originated the idea of orbitals. (5)

OR

IV. (a). Explain the formation of an ionic bond. Give any two examples. (5)

(b). Mention five properties of covalent compounds. (5)

(c). State Pauli's exclusion principle and Hund's rule of maximum multiplicity. (5)

UNIT-II

V. (a). Explain with examples the terms conductors and insulators. (5)

(b). Write the differences between galvanic cell and electrolytic cell. (5)

(c). Mention five applications of electrolysis. (5)

OR

VI. (a). Distinguish between metallic conductors and electrolytic conductors. Give two examples. (5)

(b). What is activity series? Mention any three of its applications. (5)

(c). Explain the construction and working of H_2-O_2 fuel cell. (5)

UNIT-III

VII. (a). What are the differences between saturated organic compounds and unsaturated organic compounds. Write two examples. (5)

(b). Mention any five characteristics of refractories. (5)

(c). List two uses and three advantages of optical fibres (5)

OR

VIII. (a). Name the monomer present in natural rubber. Explain the process which can be used to improve the physical properties of natural rubber. (5)

(b). Name the monomers present in the following polymers.

(i). Buna-S (ii). Buna-N (iii). Nylon-6 (5)

(c). Mention the general properties of glass. (5)

UNIT-IV

IX. (a). Define calorific value of a fuel. List three qualities of a good fuel. (5)

(b). Define cracking. Distinguish between thermal cracking and catalytic cracking. (5)

(c). Explain three measures which can be used to reduce water pollution and write two examples of water pollutants. (5)

OR

X. (a). Explain the terms acid rain and green house effect. (5)

(b). What are fuels? Write three examples of liquid fuels. (5)

(c). What is Green Chemistry? Mention three principles of green chemistry. (5)