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A23 - 00167

Reg.No.....
Signature.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL- 2023

ENGINEERING CHEMISTRY - II

[Maximum marks: 100] (Time: 3 Hours)

PART – A
Maximum marks : 10

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

1. What are bond pairs and lone pairs of electrons?
2. Define semiconductor. Give an example.
3. Name the monomers of Nylon-6,6.
4. What are the main constituents of water gas.
5. Name any two green house gases. (5 x 2 = 10)

PART – B
Maximum marks : 30

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

1. (a)Explain the shapes of s and p orbitals. (4)
   (b)State octet rule. (2)
2. (a)What are fuel cells? Give two advantages. (4)
   (b)Can we store copper sulphate in iron beaker? Give suitable explanation. (2)
3. (a)What is vulcanization of rubber? Give two merits of vulcanization. (4)
   (b)Identify the functional groups in the following compounds
   (i) Methoxymethane (ii) 2-butanone. (2)
4. (a) Write a note on acid rain. (4)
   (b) Name two nuclear fuels. (2)
5. (a) Give the quantum numbers of last electron of sodium and chlorine. (4)
   (b) What is a Co-ordinate bond? Give an example. (2)
6. (a)Write symbolic representation of Daniel cell? Write anodic, cathodic and net cell reaction. (4)

(b) Give two examples each for primary cells and secondary cells. (2)

7. (a) What are refractories? Give two properties of refractories. (4)

(b) Write two harmful effects of ozone depletion. (2)

(5 x 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 four important postulates of Bohr's model of atom. (5)

(b) List five differences between orbit and orbital. (5)

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

OR

IV.(a) Explain dual nature of matter? Calculate the velocity of electron which has a wave length of 12pm. ($h=6.626 \times 10^{-34}$ Js, $m_e=9.1 \times 10^{-31}$kg) (5)

(b) Differentiate between covalent bonding and ionic bonding with suitable examples. (5)

(c) Explain hydrogen bonding with suitable examples. (5)

UNIT-II

V.(a) Explain Faraday's laws of electrolysis. (5)

(b) Differentiate between electroplating and anodising. (5)

(c) Give any three differences between metallic conductors and electrolytic Conductors. (5)

OR

VI. (a) What is electrochemical series and what are its applications. (5)

(b) Explain the chemistry of rusting of iron. (5)

(c) Explain three methods to prevent rusting of iron. (5)

UNIT-III

VII. (a) Explain three unique properties of carbon. (5)

(b) Write notes on (i) soda glass (ii) borosilicate glass. (5)

(c) Distinguish between thermoplastics and thermosetting polymers. (5)

OR

VIII.(a) What are optical fibres? Write three uses of optical fibres. (5)

(b) Distinguish between addition polymers and condensation polymers. (5)

(c) Distinguish between saturated and unsaturated hydrocarbons with examples. (5)

UNIT-IV

IX. (a) What are primary and secondary cells? Give two examples for each. (5)

(b) What is soil pollution? What are its major causes and effects? (5)

(c) Give an account of thermal cracking and catalytic cracking. (5)

OR

X. (a) Explain green house effect. Write two impact of green house effect on environment. (5)

(b) Name three liquid fuels derived from petroleum. Write their calorific values and uses. (5)

(c) Write a note on green chemistry. (5)

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