TED (15/19) 2004 (Revision-2015/19)

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Reg.No.....

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL-2022

A22-00470

ENGINEERING CHEMISTRY - II

[Maximum marks: 100]

PART – A

Maximum marks : 10

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

- 1. Noble gases are also known as inert gases. Why?
- 2. What are non-electrolytes? Give two examples.
- 3. List any four properties of refractories.
- 4. Define calorific value.
- 5. What are secondary pollutants? Give two examples.

PART – B

Maximum marks : 30

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

1.	(a) Give de Broglie's equation. Explain the terms. de Broglie's relation is	
	significant only to microscopic particles. Explain.	
	(b) Explain hydrogen bonding with one example.	(4 + 2 = 6)
2.	(a) Write all the possible quantum number values of valence electron of	
	Aluminium. $(Z = 13)$	
	(b) Give any two limitations of Bohr's atom model.	(4+2=6)
3.	(a) Explain the electrolysis of aqueous sodium chloride.	
	(b) What is the effect of temperature on the conduction of metallic and	
	electrolytic conductors.	(4+2=6)
4.	(a) Define Faraday's first law of electrolysis. Give its mathematical expression.	
	(b) Coating of zinc is preferred than tin for the protection of iron from corrosion	
	Why?	(4+2=6)

(Time: 3 Hours)

 $(5 \times 2 = 10)$



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(4+2=6)

(5)

(4)

- (a) Write any two methods used for distinguishing saturated and unsaturated organic compounds.
 - (b) List any two advantages of optical fibre. (4+2=6)
- 6. (a) Distinguish between homo polymers and co polymers. Write one example each.
 - (b) Write two examples each for natural fibre and synthetic rubber. (4+2=6)
- 7. (a) What is water gas? How it is prepared?
 - (b) Define London smog.

PART – C

Maximum marks : 60

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

UNIT –I

III. (a) Explain ionic and covalent bonding. Illustrate the formation of CaF₂

(Ca = 40, F = 9) and HCl (H = 1, Cl = 17) (6)

- (b) Distinguish between orbit and orbital.
- (c) Calculate the uncertainty in position of an electron moving with a velocity of 4.2×10^5 m/s. (mass of electron = 9.1 x 10^{-31} kg, h= 6.625 x 10^{-34} kgm²/s. (4)

OR

IV.(a) Explain the main postulates of Bohr's atom model.	(6)
(b) State and illustrate Hund's rule of maximum multiplicity and Pauli's exclusion	
principle.	(5)

(c) Write a short note on principal quantum number.

UNIT-II

V. (a) Explain the working of H_2 - O_2 fuel cell. Write any two advantages.	(6)	
(b) Describe the mechanism of rusting of iron.	(5)	
(c) What is electrochemical series? What will you observe when iron rod is dipped		
in copper sulphate solution?	(4)	
OR		
VI. (a) With a sketch, explain the working of Daniel cell.	(6)	
(b) Compare barrier protection and cathodic protection methods for the prevention		
of corrosion.	(5)	
(c) Distinguish between electroplating and anodising.	(4)	

UNIT-III

VII. (a) How polymers are classified based on mode of synthesis. Explain with one	
example each.	(6)
(b) Write a note on soda glass and borosilicate glass.	(5)
(c) Define catenation and tetra covalency.	(4)
OR	
VIII.(a) Explain the method used for making natural rubber hard. What are its advantages?	(6)

- (b) Distinguish between thermoplastics and thermosetting plastics. (5)
- (c) What is a functional group? Which are the functional groups in amine and aldehyde. (4)

UNIT-IV

IX. (a) Define cracking. What are its types? Explain.	(6)
(b) Explain greenhouse effect? Give its major consequences.	(5)
(c) What are the qualities of a good fuel?	(4)

OR

X. (a) How fuels are classified based on their physical state. Compare any four properties	(6)
(b) Mention the importance of green chemistry in day-to-day life.	(5)
(c) What is air pollution? What are its major sources?	(4)
