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TED (15) - 2004

(REVISION - 2015)

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

ENGINEERING CHEMISTRY - II

[Time: 3 hours

Marks

 $(5 \times 2 = 10)$

P.T.O.

(Maximum marks : 100)

PART - A

(Maximum marks : 10)

- I Answer all questions in one or two sentences. Each question carries 2 marks.
 - 1. Define an orbit.
 - 2. What is a primary cell ? Give one example.
 - 3. Write two examples of synthetic rubber.
 - 4. What is a salt bridge ?
 - 5. What is smog?

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PART — B

(Maximum marks : 30)

	AI	iswe	r any five of the following questions. Each question carries 6 marks.	
	I.	(a)	Write the correct set of quantum numbers for the valence electron in sodium atom ($Z = 11$)	n
		(b)	What are super conductors ?	(4+2=6)
	2.	(a)	State Faraday's laws of electrolysis.	
		(b)	What is rust? Give its chemical formula.	(4+2=6)
	3.	(a)	Distinguish between homopolymers and copolymers. Give examples.	
		(b)	Explain tetracovalency of Carbon.	(4+2=6)
	4.	(a)	Write notes on thermal cracking and catalytic cracking.	
		(b)	Write two harmful effects of ozone depletion.	(4+2=6)
	5.	(a)	What is a dative bond? Give two examples.	
		(b)	What is the reason for the stability of noble gases ?	(4+2=6)
	6.	(a)	What are the functions of a salt bridge in an electrochemical cell ?	
		(b)	What is meant by a functional group? Write the functional group in aldehy and amine.	(4+2=6)
	7	(a)	Describe the classification of polymers on the basis of magnitude of intermol forces.	ecular
		(b)	Write the monomers of the following polymers :	
			(i) Neoprene (ii) Teflon	(4+2=6)

[9]





2

Marks

PART — C

(Maximum marks : 60)

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

Unit --- 1

Ш	(a)	State Heisenberg's uncertainity principle. Calculate the uncertainity in the	
		position of an electron if the uncertainity in its velocity is $5.7 \times 10^5 \text{ ms}^{-1}$	
		$(h = 6.625 \times 10^{-34} \text{ kgm}^2 \text{s}^{-1}, \text{ mass of electron} = 9.1 \times 10^{-31} \text{ kg.})$	5
	(b)	What is the limitation of de Broglie relationship? Calculate the velocity of a	
		moving electron which has a wavelength of 12 pm.	5
	(c)	List any five differences between orbit and orbital.	5
		Or	
IV	(a)	Explain the formation of an ionic bond. Give any two examples.	5
	(b)	What is Hydrogen bonding? Write two conditions necessary for the formation of Hydrogen bonding. Explain why boiling point of HC1 is lower than that of HF.	5
	(c)	Mention five differences between ionic compounds and covalent compounds.	5
		UNIT II	
v	(a)	Classify the different types of conductors.	5
	(b)	Explain the construction and working of Daniel cell.	5
	(c)	Distinguish between electroplating and anodizing. OR	5
VI	(a)	What is electrochemical series and what are its applications ?	5
	(b)	Explain the construction and working of H2-O2 fuel cell.	5
	(c)	Explain two methods used to prevent rusting of iron.	5
		Unit — III	
VII	(a)	Distinguish between thermoplastics and thermosetting plastics.	5
	(b)	Write notes on : (i) Soda glass (ii) Safety glass.	5
	(c)	Write five charateristics of refractories.	5
		Or	
VIII	(a)	Explain the classification of polymers based on mode of polymerization and distinguish between them.	5
	(b)	What are optical fibres? Write three uses of optical fibres.	5
	(c)	What is borosilicate glass ? List its important properties and two uses.	5
		Unit — IV	
IX	(a)	What are primary fuels and secondary fuels ? Give three examples for each.	5
	(b)	Mention three steps to prevent water pollution and write two examples of water pollutants.	5
	(c)	Name three liquid fuels derived from petroleum. Write their calorific values and uses.	5
		Or	
x	(a)	What are nuclear fuels? Write three examples of nuclear fuels.	5
	(b)	What is photochemical smog? Mention its harmful effects.	5
	(c)	Explain the progressive transformation of wood to anthracite coal.	5