Total No. of printed pages = 3

CY 181201

Roll No. of candidate

BINA CHOWCHLEY CLASS Agers, Halkhowspara, Guwahau -781017

B.Tech. 2nd Semester End-Term Examination

CHEMISTRY - 201

(New Regulation & New Syllabus)

Full Marks - 70

1.

Time - Three hours

10)

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any four from the rest.

Ans	wer	all questions:		(10 × 1		
(i)	Lead acid battery is a					
	(a)	primary cell	(b)	secondary cell		
	(c)	dry cell	(d)	fuel cell		
(ii)	Which among the following will have the highest O — O bond length?					
	(a)	O_2^*	(b)	O_2		
	(c)	O_2^-	(d)	O_2^{2-}		
(iii)	Monomer of Polystyrene is					
	(a)	ethylene	(b)	vinyl chloride		
	(c)	isoprene	(d)	styrene		
(iv)	Atom economy of an addition reaction is					
	(a)	always less than 100%	(b)	50%		
	(c)	100%	(d)	90%		
(v)	During corrosion, evolution of hydrogen occurs in					
	(a)	acidic medium	(b)	basic medium		
	(c)	neutral medium	(d)	all of the above		

	(vi)	Which of the following does not show nuclear magnetic resonance?						
		(a) ¹ H (b) ¹³ C						
		(c) 16 O (d) 19 F						
	(vii)	An electric vehicle uses						
		(a) Li — ion battery (b) Lead acid battery						
		(c) Ni — Cd battery (d) dry cell						
	(viii) An example of biodegradable polymer is						
		(a) starch (b) teflon						
		(c) PVC (d) none of the above						
	(ix) Fermation of rust on iron is an example of							
		(a) oxidation corrosion						
		(b) liquid metal corrosion ENACHOWING COMPANY						
		(c) electrochemical corrosion Azera, Matrellorem. Guwahatt 751017						
		(d) chemical corrosion						
	(x)	In which of the following, $n \to \pi^*$ transition is possible?						
		(a) CR ₃ CH=CH ₂ (b) C ₂ H ₅ OCH ₃						
		(c) CH ₃ COCH ₃ (d) none of the above						
2.	(a)	Explain any two principles of green chemistry. (4)						
	(b)	Draw the molecular orbital energy level diagram of NO molecule and find out its bond order and magnetic behaviour. (6)						
	(c)	In a polymer, there are 100 molecules of molecular weight 100, 200 molecules of molecular weight 1000 and 300 molecules of molecular weight 10,000. Find the number average molecular weight $(\overline{M}n)$, weight average molecular weight $(\overline{M}w)$ and poly dispersity index (PDI) of the polymer. (5)						
3.	(a)	Discuss the principle of UV — Visible spectroscopy? (4)						
	(b)	What are primary and secondary cells? Give the charging and discharging reactions of a lead acid battery. (2+4)						
	(c)	Why does metal show tendency to undergo corrosion? Explain sacrificial anodic protection method of controlling corrosion. (2+3)						
4.	(a)	Discuss the conductivity of p — doped polyacetylene. (3)						
	(b)	What is meant by functionality of a monomer? What is the functionality of ethylene molecule? (2+1)						
CY	18120	1 2						

	(c)	Explain the following:	$(3 \times 3 = 9)$
		(i) significance of ψ and ψ^2 .	
		(ii) eigen function and eigen value	
		(iii) radial and angular wave functions	
5.	(a)	Write short notes on (i) Fullerenes (ii) Carbon Nanotubes	(3+3)
	(b)	What are liquid crystals? What are their types? How does liquidisplay take place?	
	(c)	Predict the number of signals in the NMR spectrum of the molecules	1010
		(i) CH3CH2CH3	
		(ii) CH ₃ COCH ₃ (GHATA/SITE)	
		(iii) Benzene Gewahali-781017	(3)
	(d)	What are Biopolymers?	(1)
6.	(a)	Discuss the methods of solid waste disposal.	(5)
	(b)	Give reasons of the following:	(2 + 2)
		(i) Impure metal corrodes faster than pure metal under conditions.	
		(ii) Corrosion of water filled steel tanks occurs below the water lin	ie.
	(c)	Give the uses and disadvantages of Li - ion battery.	(4)
	(d)	Write two applications of IR spectroscopy.	(2)
7.	(a)	What is electrochemical corrosion? Discuss the various factors influencing of corrosion.	ng the rate (2+4)
	(b) (c)	What are carbon foot print and carbon sequestration? Discuss Bottom up approach for synthesis of Nanomaterial.	(4)
	(d)	Calculate the atom economy of formation of ethyl chloride in the reaction	300
		$\text{CH}_3\text{CH}_2\text{OH} + \text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow \text{CH}_3\text{CH}_2\text{Cl} + \text{NaHSO}_4 + \text{H}_2\text{O}.$	(2)