COURSE: ENGINEERING CHEMISTRY-II

Revision: (2015) **Course Code: 2004**

Qn. No	Scoring Indicators	Split up Score	Sub Total	Total
I 1.	Shared pair of electron—bond pair	1		
	Unshared pair of electron—lone pair	1	2	2
2.	Conductivity between conductors and insulators.	1		
	Silicon or germanium	1	2	2
3.	Hexamethylene diamine and adipic acid.	2	2	2
4.	Carbon monoxide and hydrogen gas.	2	2	2
5.	CO_2,methane,water vapour, sulphur dioxide or CFC.	2	2	2
II.	(a) s orbital is spherical and p orbital is dumb bell shaped. Figure.	4	4	
1.	(b)Statement of octet rule	2	2	6
2.	(a)Fuel cells supply continuous emf as long as external supply of fuel is maintained .pollution free ,continuous emf supply.	4	4	
	(b)No. Copper get precipitated or reduced.	2	2	6
3.	(a)heating with sulphur at 373-415K .improve elasticity,strength and makes rubber less sensitive to temperature and chemicals.	4	4	
	(b)ether ,and ketone.	2	2	6
4.	(a)chemistry of acid rain formation,consequence, ways to reduce acid rain (4 points)	4	4	
	(b)Enriched uranium(U235),Plutonium239 from U238.	2	2	6
5.	(a) sodium n=3,l=0,m=0,s=+1/2 Chlorine n=3,l=1,m=-1,0,or 1 and s==1/2	4	4	
	(b) definition,example SO_2 OR NH_4^+	2	2	6

6.	(a) $Zn(s)/Zn^{2+}(aq)// Cu^{2+}(aq)/Cu(s)$	1		
	$Zn(s) \rightarrow Zn^{2+}(aq) + 2e^-$ (oxidation)	1		
	$Cu^{2+}(aq) + 2e^- \rightarrow Cu(s)$ (reduction)	1		
	$Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$ (redox reaction)	1	4	
	(b) Dry cell and mercury cell---primary cells			
	Lead storage battery and nickel cadmium battery—secondary cells	2	2	6
7.	(a)definition of refractory material,	2		
	refractoriness and minimum tendency of thermal spalling.	2	4	
	(b) sun burn, global warming and /damage to vegetation.	2	2	6
III				
	(a)four important postulates of bohr's model of atom.	5	5	
	(b)five differences between orbit and orbital.	5	5	
	(c) statement of hunds rule and paulis exclusion principle.	5	5	15
IV	(a) statement and equation of dual nature of matter. $\lambda = \frac{h}{mV}$	3		
	$V=h/m\lambda$ $V= \frac{6.626\times10^{-34}}{9.1\times10^{-31}\times12\times10^{-12}} = 6.06\times10^{7} ms^{-1}$	2	5	
	(b)covalent bonding definition and example	2.5		
	Ionic bonding definition and example.	2.5	5	
	(c) hydrogen bonding explanation,two examples.	5	5	15
V	(a) Faradays first law,equation.	2.5		
	Faradays second law,equation.	2.5	5	
	(b) Electroplating-3 points	2.5		
	Anodizing-3 points	2.5	5	
	(c) Metallic conductors-3points.	2.5		
	Electrolytic conductors-3points.	2.5	5	15
VI	(a) Definition of electrochemical series,3 applications.	5		
	(b) Formation of electrochemical cell,oxidation and reduction reactions,formation of rust.	5		
	(c) Three methods to prevent rusting of iron.	5	15	15

VII				
	(a) Explanation of Catenation, isomerism, multiple bond formation.	5	5	
	(b) Borosilicate glass-composition, properties, uses.	2.5		
	Soda glass-composition, properties, uses.	2.5	5	
	(c) Three points of difference between thermoplastics and thermosetting polymers.	5	5	15
VIII				
	(a) Optical fibre-definition, three uses.	5	5	
	(b) Addition polymer-3 points, example.	2.5		
	Condensation polymer-3 points, example	2.5	5	
	(c) saturated compound-3 points, example.	2.5		
	Unsaturated compound-3points, example.	2.5	5	15
IX	(a)primary and secondary fuels-definition	3		
	Two examples.	2	5	
	(b) soil pollution –definition	2		
	Two causes and two effects.	3	5	
	(c)thermal cracking-explanation	2.5		
	Catalytic cracking-explanation.	2.5	5	15
X				
	(a) Green house effect-explanation.	3		
	Two impact on environment.	2	5	
	(b) nuclear fuels-explanation,three examples.	5	5	
	(c) green chemistry-ideas,definition,importance.	5	5	15