

SCHEME OF VALUATION**(Scoring Indicators)**

Revision: 2015		Course Code: 2004 .		
Course Title: <i>Engineering chemistry - II</i>				
Qst No	Scoring Indicator	Split Up score	Sub Total	Total
I.	PART A (Maximum marks : 10) Answer all questions in one or two sentences. Each question carries 2 marks.			
1.	Rule states that pairing of electrons in the degenerate orbital takes place until they are singly occupied.	2	2	10 Marks
2.	Primary cell can be used once and not recharged. Any one example - dry cell , mercury cell etc	1 1	2	
3.	Corrosion is the gradual destruction of metals by chemical or electrochemical attack.	2	2	
4.	Vinyl Chloride Adipic acid and hexamethylene diammine	1 1	2	
5.	Smog is derived from smoke and fog.	2	2	
II.	PART B (Maximum marks : 30) Answer any <i>five</i> of the following questions. Each question carries 6 marks.			
1. (a)	Ionic bond formation Any two examples	2 2	4	6 Marks
(b)	De-Broglie relation $\lambda = \frac{h}{mv}$ Explaining terms	1 1	2	
2. (a)	Salt bridge Any 3 functions	2 2	4	6 Marks
(b)	Coating iron articles with zinc.	2	2	

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3. (a)	Faraday's first law with mathematical representation $w = zit$	2	4	6 Marks	
	Faraday's second law with mathematical representation $\frac{WA}{WB} = \frac{EA}{EB}$	2			
(b)	Elements arranged in the order of their standard electrode potential.	2	2		
4. (a)	Any 4 point of difference	4	4		6 Marks
	(b) Explanation	2	2		
5. (a)	Refractories are materials that can withstand high T without melting, softening or deformation. Acidic, basic and neutral refractories – definition with example	1	4	6 Marks	
	(b) Any two uses	3			
6. (a)	Thermal cracking	2	4		6 Marks
	Catalytic cracking	2			
(b)	Any two harmful effects	2	2		
7. (a)	Any four characteristics of fuel	4	4	6 Marks	
	(b) Mention the important green house gases.	2	2		

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	<p><u>PART C</u> (Maximum marks : 60) (Answer <i>one</i> full question from each unit. Each full question carries 15 marks.)</p> <p style="text-align: center;">UNIT – I</p>			
III. (a)	Heisenberg's uncertainty principle statement Mathematical representation $\Delta x \times m\Delta V \geq \frac{h}{4\pi}$ Substitution Answer	2 1 1 1	5	15 Marks
(b)	Hydrogen bond formation Any two examples	3 2	5	
(c)	Define quantum numbers Sodium (Atomic No: 11) Electronic configuration $1S^2 2S^2 2P^6 3S^1$ $n = 3, l = 2, m = -2, -1, 0, +1, +2$ and $s = +\frac{1}{2}$ Correct values for n, l, m and s	2 1 2	5	
	OR			
IV. (a)	Any five postulates	5	5	15 Marks
(b)	Any five difference	5	5	
(c)	Pauli's exclusion principle	2		
	Electronic configuration Chlorine (Atomic no: 17) $1S^2 2S^2 2P^6 3S^2$ $3P^5$ Nitrogen (Atomic no: 7) $1S^2 2S^2 2P^3$ Aluminium (Atomic no: 13) $1S^2 2S^2 2P^6 3S^2 3P^1$	1 1 1	5	

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UNIT -II				
V.	(a) Any five points of difference.	5	5	15 Marks
	(b) Cathodic protection	2.5	5	
	Antirust solution.	2.5		
	(c) Diagram	1	5	
	Explanation	1		
	Anodic reaction	1		
	Cathodic reaction	1		
	Net cell reaction	1		
OR				
VI.	(a) Explaining metallic conductors	2	5	15 Marks
	Example for metallic conductor	0.5		
	Explaining electrolytic conductors	2		
	Example for electrolytic conductors	0.5		
	(b) Figure	1	5	
	Explanation	1		
	Anodic reaction $Zn \rightarrow Zn^{2+} + 2e^{-}$	1		
	Cathodic reaction $Cu^{2+} + 2e^{-} \rightarrow Cu$	1	5	
	Net cell reaction $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$	1		
	(c) Chemical corrosion	2.5		
	Electrochemical corrosion	2.5		

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UNIT -III				
VII. (a)	Any fine points	5	5	15 Marks
(b)	Composition of soda glass and borosilicate glass.	2	5	
	Any two uses of soda glass and borosilicate glass.	5		
(c)	Classified as elastomers, fibres and plastics	2	5	
	Definition for elastomers	1		
	Definition for fibres	1		
	Definition for Plastics	1		
OR				
VIII. (a)	Functional group is defined as an atom or group of atoms which determines the properties of an organic compound. Functional group of acid , amine and aldehyde	2	5	15 Marks
(b)	Any five points	3	5	
		5		
(c)	Explain any five following points. Tetravalency of carbon Catenation capacity Strength of C-C bond Possibility of multiple bonds Ability to exhibit isomerism Capacity to form strong bond with other non metals	5	5	

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	UNIT – IV				
X.	(a)	Formation of acid rain	3	5	15 Marks
		Harmful effects	2		
	(b)	Green chemistry	2	5	
		Principles of green chemistry	3		
	(c)	Primary fuels obtained directly from nature. Eg: wood, peat, coal	2.5	5	
		Secondary fuels are derived from primary fuels. Eg: Petrol, diesel, kerosene	2.5		