Hall Ticket No		Question Paper Code: AHS005			
INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)					
W FOR VS	MODEL QUESTION PAPER – II				
Four Year B.Tech I Semester End Examinations, December -2016					
	Regulation: R16				
	ENGINEERING CHEMISTRY				
	(Common for all branches)				
Time: 3 Hours		Max Marks: 70			
A	nswer any ONE question from each U	nit			

All questions carry equal marks All parts of the question must be answered in one place only

$\mathbf{Unit} - \mathbf{I}$

1.	(a)	Explain	charging and	d discharging o	f lead-acid storage cell	with chemical reactions.	[6M]
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- (b) What is electrochemical series? Give its applications with suitable examples. [5M]
- (c) The resistance of 0.1N solution of an electrolyte is 40 ohms, if the distance between the electrodes is 1.2 cm and area of cross-section is 2.4 sq.cm. Calculate the Equivalent conductance of the solution. [3M]
- 2. (a) What are reference electrodes? Explain the construction and functioning of Quinhydrone electrode. [6M]
 - (b) Why the anode of galvanic cell is negative and cathode is positive? Write the different electrode reactions occur at the electrodes. [5M]
 - (c) Discuss the working principles of primary batteries.

$\mathbf{Unit}-\mathbf{II}$

3.	(a)	Explain the electrochemical theory of wet corrosion. Give its mechanism.		
	(b)	What are the different methods employed to control corrosion. Explain cathodic prot method in detail.	ection [7M]	
4.	(a)	Describe the factors effecting the rate of corrosion by nature of metal.	[6M]	
	(b)	Explain the process of electroplating with suitable example.	[4M]	
	(c)	An iron rod partly immersed in water undergoes corrosion near waterline. Give reason	[4M]	

$\mathbf{Unit}-\mathbf{III}$

5.	(a)	What is zeolite? Explain the method for softening of water.	[6M]
	(b)	Explain the principle involved in complexometric method for the determination of hardn	ess of
		water.	[5M]
	(c)	What is caustic embrittlement? Explain and also write its prevention.	[3M]
6.	(a)	Describe the causes and effects of scale and sludge formation.	[6M]

[3M]

- (b) Write short note on the following i) Calgon conditioning ii) Phosphate conditioning [4M]
- (c) Calculate the amount of temporary and permanent hardness of water sample which contains the following impurities. $Ca(HCO_3)_2 = 4.86 ppm, Mg(HCO_3)_2 = 5.84 ppm, CaSO_4 = 6.86 ppm$ and $MgSO_4 = 8.4 ppm$ [4M]

Unit - IV

$\mathbf{Unit}-\mathbf{V}$						
	(c)	Write the preparation, properties and applications of poly vinyl chloride.	[3M]			
	(b)	What are the ingredients used in compounding of plastics. What are their functions.	[4M]			
8.	(a)	Explain the mechanism of chain polymerisation.	[7M]			
	(c)	Write a short note on fiber reinforced plastic?	[3M]			
	(b)	Explain the determination of flash and fire point.	[4M]			
	. ,	Nylon 6 and Bakelite.	[7M]			
7.	(a)	What is condensation polymerization? Write the preparation, properties and applicati	ons of			

9. (a) What is cracking? Describe the process of Fixed bed catalytic cracking. [7M] (b) Write an account of the composition, characteristics and applications of CNG and LPG [7M]10. (a) Explain the ultimate analysis of a solid fuel and its significance. [7M] (b) Calculate the minimum amount of air required for complete combustion of 1kg of coal sample having the following compositions: C=80%, O=8%, S=2%, H=5%, N=1% and ash=4%. Oxygen in air is 23% by weight. [4M][3M]

(c) Define a fuel? How fuels are classified and give examples.