R13

Code No: 111AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B.Tech I Year Examinations, June - 2014
ENGINEERING CHEMISTRY
(Common to all Branches)

Time: 3 hours **Max. Marks: 75**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A

1.a)	What is cementation?	[2m]
b)	What is equivalent conductance? Give its units.	[3m]
c)	Give the classification of Refractories.	[2m]
d)	What is a plastic? What are its constituents?	[3m]
e)	How is exhausted ion-exchange resins regenerated?	[2m]
f)	How Calgon treatment prevents scale formation in boilers?	[3m]
g)	Define 'Cetane number' and give its significance.	[2m]
h)	Differentiate HCV and LCV.	[3m]
i)	What is Condensed Phase Rule?	[2m]
j)	Write the limitation of Freundlich Adsorption Isotherm.	[3m]

PART- B

2.a) Write Nernst Equation and its applications.
b) Explain the construction of Quinhydrone electrode.
c) Explain charging and discharging of Lead acid storage cell with chemical reactions.

OR

3.a) Describe the factors effecting rate of corrosion by nature of metal.
b) Explain the mechanism of oxidation corrosion.
c) What is a paint?

4.a) Write the differences between addition and condensation Polymerizations with examples.
b) Write a note on Biodegradable polymers.
c) Write preparation, properties and engineering applications of Bakelite.

OR

5.a) Explain Compression Moulding process with a neat diagram.
b) What are cloud point and pour point? Explain their significance.
c) Give the applications of nano materials.

6.a) Discuss the ion-exchange process for softening of water.
b) Write a note on Scale and Sludges.

OR

7.a) What is Break point of Chlorination? Explain.
b) What is hardness of water? Give the causes of hardness.
c) Calculate the amount of temporary and permanent hardness of a water sample which contains following impurities. $Ca(HCO_3)_2$ = 121.5 ppm, $Mg(HCO_3)_2$ = 116.8 ppm, $MgCl_2$ = 79.2 ppm, $CaSO_4$ = 102 ppm.

8.a) What is Cracking? Describe the process of fixed bed Catalytic cracking.
b) Describe the process of refining of petroleum.

OR

9.a) Explain the determination of Calorific value of gaseous fuel by Junker's Calorimenter.
b) Explain proximate analysis and its significance.

10.a) What is Annealing and Hardening?
b) Explain Freundlich adsorption isotherm.
c) Write the applications of adsorption.

OR

11.a) Why the sea water is in blue colour? Explain.
b) What is Phase rule? Define the terms involved in Phase rule.
c) Discuss the application of phase rule to the water system.

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