Code No: 51005 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year Examinations, May - 2016
ENGINEERING CHEMISTRY
(Common to CE, EEE, ME, ECE, CSE, CHEM, EIE, BME, IT, MCT, ETM, MMT, AE, BT, AME, MIE, PTE)

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

Answer any five questions
All questions carry equal marks

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1.a) State and explain the Kohlrausch's law and give its applications.
b) Describe the construction and working of Ni-Cd battery and mention its applications. [7+8]

2.a) What is corrosion? Give the mechanism of electrochemical corrosion of iron.
b) Write the differences between galvanizing and cladding.
c) What is a paint? What are its constituents? [7+4+4]

3.a) Compare addition and condensation polymerization with examples.
b) What are Conducting Polymers? Give their classification and applications.
c) Differentiate Fibre, plastic and elastomer with examples. [5+5+5]

4.a) What is Carbonate and Non carbonate hardness of water? How are they differ from each other?
b) What are scales? What are their disadvantages? How are they removed?
c) Explain the zeolite process of softening of water. Discuss its merits over lime soda process. [4+4+7]

5.a) What is adsorption? Explain Longmuir adsorption isotherm and write its applications.
b) What are colloids? Explain electrical and optical properties and applications of colloids. [7+8]

6.a) Explain the proximate analysis of coal and give its significance.
b) A gas used in an internal combustion engine had following composition by volume, H_2 = 45%, CH_4 = 36%, CO = 15%, N_2 = 4%. Find the volume of air required for the combustion of 1 M^3 of the gas. [8+7]

7.a) Draw a neat phase diagram of one component (water) system and explain the curve, areas and points with reference to the phase rule.
b) Explain various heat treatment methods. [8+7]

8.a) What is the composition of portland cement? Explain the reactions involved in setting and hardening of cement.
b) What is a lubricant? Explain the mechanism of thick film lubrication.
c) Give the characteristics and applications of super conductors. [7+4+4]

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