Code No: 111AE **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year Examinations, May - 2018
ENGINEERING CHEMISTRY
(Common to CE, EEE, ME, ECE, CSE, EIE, IT, MCT, ETM, MMT, AE, AME, MIE, PTM, AGE)

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

(25 Marks)

1.a)	Write the cell notation for Calomel Electrode.	[2]
b)	What is the reason for pitting corrosion to occur?	[3]
c)	What are the drawbacks of natural rubber?	[2]
d)	Differentiate Plastic and Resin.	[3]
e)	What is caustic embrittlement? Write the one preventive method for it.	[2]
f)	What are the disadvantages of Zeolite process?	[3]
g)	Define HCV and LCV and write their inter relationship.	[2]
h)	Write composition and uses of LPG and CNG.	[3]
i)	Give the principle of Electrophoreses.	[2]
j)	Mention applications of colloids in industry.	[3]

PART-B

(50 Marks)

2.a) Explain determination of pH by using Calomel electrode.
b) What is a fuel cell? Describe construction and working principle of Hydrogen-Oxygen fuel cell. [5+5]

OR

3.a) Describe mechanism of electrochemical corrosion by taking Rusting of Iron as an example.
b) Write a note on sacrificial anodic method. [6+4]

4.a) Differentiate between addition and condensation polymerization.
b) Give preparation, properties and engineering applications of
i) Nylon:6 ii) Dacron iii) Bakelite [4+6]

OR

5.a) What are conducting polymers write the classification and applications.
b) Give the applications of Nano materials. [6+4]

6.a) Explain Ion exchange process for the softening of water.

b) 3.50 ml of a sample water consumed 15 ml of 0.01 EDTA before boiling and 5 ml of the same EDTA after boiling. Calculate the degree of hardness, permanent hardness and temporary hardness. [5+5]

OR

7.a) Write about Boiler corrosion.

b) Describe various steps involved in domestic water treatment. [5+5]

8.a) Outline the schematic procedure for synthesis of petrol by Bergius process.

b) Mention the criteria for selecting a good fuel. [5+5]

OR

9.a) Explain Ultimate analysis of coal and give its significance.

b) What is cracking? Describe fixed bed catalytic cracking process with a neat diagram. [5+5]

10.a) Explain about phase diagram of lead –silver system?

b) Write about:

i) Advantages and limitations of phase rule.

ii) Application of Pb-Ag system in Pattison's process. [5+5]

OR

11.a) Describe hardening, annealing and normalization.

b) Write a note on Electrical and Optical properties of colloids. [5+5]

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