

R13

Code No: 111AE

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, MHE, 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. [6+4]
 - b) Write a note on sacrificial anodic method.
- 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. [6+4]
 - b) Give the applications of Nano materials.

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- 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]

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- 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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