

Code No: 121AE

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech I Year Examinations, August/September - 2017

ENGINEERING CHEMISTRY

(Common to CE, EEE, ME, ECE, CSE, EIE, IT, MCT, MMT, AE, MIE, PTE, CEE)

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 anode and cathode reactions of Methanol-oxygen fuel cell. [2]
- b) Give two differences between Galvanic and Concentration cell corrosion. [3]
- c) Define Polymer, Co-polymer functionality. [2]
- d) How the refractories are classified? Give example for each. [3]
- e) Differentiate hard water and soft water. [2]
- f) What are the disadvantages of Zeolite process? [3]
- g) Define CNG and uses. [2]
- h) What are the advantages of solid fuels? [3]
- i) What is reduced phase rule? [2]
- j) Write the limitations of Freundlich adsorption isotherm. [3]

PART-B

(50 Marks)

- 2.a) Describe the construction and working principle of Glass electrode.
 - b) Explain the construction and functioning of a nickel – cadmium battery. [5+5]
- OR**
- 3.a) Write a brief note each on Tinning and Galvanisation.
 - b) Explain the mechanism of electrochemical corrosion of iron. [5+5]
- 4.a) Explain different methods of moulding of plastics.
 - b) Write preparation, properties and engineering applications of PVC and Nylon -6, 6. [5+5]
- OR**
- 5.a) Give the classification, characteristics and applications of refractories.
 - b) How nanoparticles are prepared by chemical vapour deposition method? Explain. [5+5]
- 6.a) Explain the different methods of disinfection of potable water.
 - b) Explain the various internal treatment methods of boiler water. [5+5]
- OR**
- 7.a) What is priming and foaming? What are its causes and effects?
 - b) Why phosphate conditioning is preferred over carbonate conditioning? Explain. [5+5]

- 8.a) What is crude oil? Explain its refining.
b) Explain proximate analysis of coal and give the significance. [5+5]

OR

- 9.a) Explain the synthesis of petrol by Bergius process.
b) What is flue gas? Explain the analysis of flue gas by Orsat's apparatus. [5+5]

- 10.a) What is Pattinsons's desilverisation? Explain Ag-Pb system with the help of phase diagram.

- b) Write a note on micelles and their applications. [5+5]

OR

- 11.a) Explain electrical and optical properties of colloids with an example for each.

- b) Describe heat treatment based on iron-carbon phase diagram. [5+5]

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