

Code No: 51005

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech I Year Examinations, May/June - 2019

ENGINEERING CHEMISTRY

(Common to CE, EEE, ME, ECE, CSE, CHEM, BME, IT, MMT, AE, AME, MIE)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

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- 1.a) Explain the principle and procedure involved in the potentiometric acid base titrations.
b) What is secondary battery? Describe the construction and working of lead acid storage cell. [7+8]
- 2.a) Discuss the various factors that influence the rate of corrosion of a metal.
b) Explain galvanization of iron. [8+7]
- 3.a) Discuss the mechanism of chain growth and step growth polymerization with examples.
b) Outline the synthesis of nylon-6, 6 and SBR and mention their applications. [7+8]
- 4.a) Explain reverse osmosis process and its advantage.
b) 500 ml of a sample of water contains 43.8mg of $\text{Mg}(\text{HCO}_3)_2$, 9.5mg of MgCl_2 , 2.43mg of $\text{Ca}(\text{HCO}_3)_2$, 6.8mg of CaSO_4 and 5.85mg NaCl. Calculate its temporary and permanent hardness. [7+8]
- 5.a) Define adsorption and differentiate between physical and chemical adsorption.
b) What are nanomaterials? How are they prepared? Give their applications. [7+8]
- 6.a) Discuss the Fischer-Tropsch's process of Synthesis of petrol.
b) Calculate the HCV and LCV of a fuel having the following composition. 75% C, 6% Hydrogen, 4% Oxygen, 3% Sulphur, 4% Nitrogen and rest is ash. [7+8]
- 7.a) Explain heat treatment based on iron-carbon phase diagram.
b) With a neatly labeled phase diagram, discuss the one component system. [7+8]
- 8.a) Discuss thick film and boundary film lubrication with suitable examples.
b) What are insulators? Give their classification and applications. [7+8]

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