

Code No: 121AE**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD****B.Tech I Year Examinations, July - 2021****ENGINEERING CHEMISTRY****(Common to CE, EEE, ME, ECE, CSE, IT, MCT, ETM, AE, MIE, PTM)****Time: 3 hours****Max. Marks: 75****Answer any five questions
All questions carry equal marks**

- 1.a) Describe the construction and working of Calomel electrode.
b) What is Cathodic Protection? Explain sacrificial anode method. [7+8]
- 2.a) What is an electroless plating? Explain the electroless plating of nickel.
b) Define fuel cell? Explain the construction and working of Methanol-Oxygen fuel cell. [7+8]
- 3.a) Write the mechanism of chain growth polymerization with suitable examples.
b) Explain the preparation of nanomaterials by sol-gel method. [7+8]
- 4.a) Discuss various mechanisms of lubrication with examples.
b) Discuss the various steps involved in setting and hardening of cement. [7+8]
- 5.a) Give the differences between scales and sludges.
b) Describe the Ion-exchange process for softening of hard water. [7+8]
- 6.a) What is Caustic embrittlement? Explain its disadvantages and prevention.
b) Describe the Reverse Osmosis process for softening of hard water and give its advantages. [7+8]
- 7.a) Explain Proximate analysis of coal. What is its significance?
b) What is Petrol? How is it synthesized by Fischer-Tropsch's process? [7+8]
- 8.a) Describe the phase diagram of one-component water system.
b) Derive Langmuir adsorption isotherm. Give the applications of colloids in industry. [7+8]

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