

FACULTY OF ENGINEERING & INFORMATICS**B.E. I – Year (Backlog) Examination, May / June 2017****Subject: Engineering Chemistry****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part A and any five questions from Part B.****PART – A (25 Marks)**

- 1 Differentiate between electrolytic and electrochemical cell. 3
- 2 Write the chemical reaction involved in H₂-O₂ fuel cell 2
- 3 Explain Waterline corrosion. 2
- 4 What is Break-point chlorination? Give its significance 3
- 5 What is meant by Degree of Polymerization? 2
- 6 Mention a few applications of Composites. 2
- 7 What are the characteristics of a good propellant? 2
- 8 What is octane number? What is its significance 3
- 9 What is saponification number? What is its significance? 3
- 10 What are the principles of Green Chemistry? 3

PART – B (5x10 = 50 Marks)

- 11 a) Derive Nernst equation for the calculation of cell EMF and give its applications. 6
 - b) What is the EMF of the following cell at 25⁰C.
 $Zn_{(s)}/Zn^{2+} (0.2M)//Ag^+(0.002M)/Ag_{(s)}$.
 The standard EMF of the cell is 1.54v 4
- 12 a) What is Electrochemical Corrosion? Describe the mechanism of Electrochemical corrosion. 5
 - b) Define Alkalinity of water. How is it determined? 5
- 13 a) Describe the method of preparation, properties and application of the following:
 - i) Teflon
 - ii) Perlon-U 6
 - b) What is Conducting Polymer? Explain the mechanism of conduction in Polyacetylene. 4

- 14 a) What is meant by Cracking of Petroleum? Explain moving bed catalytic cracking method. 6
- b) A sample of coal contains 60% C, 33%O, 6%H, 0.5%S, 0.2% N & remaining ash. Calculate the Gross and Net calorific value of coal. 4
- 15 a) Draw a neat labeled Phase Diagram of Water system and explain Areas, Curves & Triple point in it. 6
- b) Write a note on Extreme Pressure Lubrication. 4
- 16 a) Differentiate between Anodic & Cathodic coatings. 4
- b) Write a note on potentiometric titrations. 6
- 17 a) Explain Fractionation of Petroleum Crude with the help of a neat diagram 5
- b) Define Liquid Crystals. Explain about the Thermotropic Liquid crystals. 5
