

**FACULTY OF ENGINEERING**  
**B.E. I - Semester (AICTE) (New) (Main) Examination, July 2021**

**Subject: Chemistry (Except Civil)**

**Time: 2 Hours**

**Max. Marks: 70**

- Note: (i) First question is compulsory and answer any three questions from the remaining six questions.**  
**(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.**  
**(iii) Missing data, if any, may be suitably assumed.**

**1 Answer any four questions.**

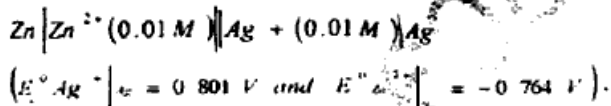
**(4 x 4 = 16 Marks)**

- (a) Differentiate single electrode potential and standard electrode potential.  
 (b) Write the specifications of potable water.  
 (c) What is degree of polymerization?  
 (d) Name the monomers involved in the formation of Nylon 6:6 and Bakelite.  
 (e) Write the composition and uses of LPG.  
 (f) What do you mean by clean technology?  
 (g) Explain the relation between EMF and change in free energy.

**(3x18 = 54 Marks)**

**2 (a) What is ion selective electrode? Explain construction and working of glass electrode.**

**(b) Calculate the  $E_{\text{cell}}$  of the following cell at 25°C by using Nernst equation.**



**3 (a) Define Alkalinity of water. Explain the estimation of alkalinity of water.**

- (b) Explain the mechanism of wet corrosion by**  
 (i) Evolution of hydrogen and  
 (ii) Absorption of oxygen.

**4 (a) Discuss the applications of conducting polymers.**

**(b) Explain the preparation, properties and uses of silicone rubbers.**

**5 (a) Describe the composition and use of diesel fuel.**

**(b) Explain the fuel rating by octane number and cetane number.**

**6 (a) Describe the concept of trans-esterification and carbon neutrality for biodiesel.**

**(b) Explain the composition and characteristic properties of composites.**

**7 (a) Discuss construction and applications of methanol-oxygen fuel cell.**

**(b) What is biodegradable polymer? Explain properties and applications of polylactic acid.**

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