



**GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN**  
(AUTONOMOUS)

(Affiliated to Andhra University, Visakhapatnam)

**B.Tech. - II Semester Regular Examinations, June / July – 2025**

**Green Chemistry**

(Common to CSE-(AIML)& ECE)

1. All questions carry equal marks
2. Must answer all parts of the question at one place

**Time: 3Hrs.**

**Max Marks: 70**

**UNIT-I**

1. a. Outline the principle and procedure in determination of hardness of water by EDTA method. 7M  
b. With a neat labelled diagram explain reverse osmosis method and list out the advantages. 7M
- OR
2. a. Describe ion-exchange method for the water softening and regeneration of exhausted resins. 7M  
b. Explain scale and sludge formation in boilers. How are they removed. 7M

**UNIT-II**

3. a. Explain the working and discharging reactions of Ni-Cd battery. 7M  
b. Differentiate primary and secondary batteries. Mention the environmental applications. 7M
- OR
4. a. Describe the construction and working of Li-ion batteries with the electrode reactions. 7M  
b. Outline the working and chemical reactions occurring during discharge of advanced batteries for electric vehicles. Give its advantages. 7M

**UNIT-III**

5. a. Describe the working principle, fabrication and applications of optical fibres. 7M  
b. Explain the working principle and applications of Proton exchange membrane fuel cells. 7M
- OR
6. a. Discuss the working principle and applications of alkaline fuel cells? 7M  
b. Outline the construction, working and chemical reactions of  $\text{CH}_3\text{OH}-\text{O}_2$  fuel cell. 7M

**UNIT-IV**

7. a. Discuss the electrochemical corrosion mechanism by taking formation of rust as an example. 7M  
b. Describe the factors influencing rate of corrosion. 7M
- OR
8. a. Explain Pitting and Waterline corrosion 7M  
b. With a neat labelled diagram explain electroplating of Copper on an iron spoon. 7M

**UNIT-V**

9. a. Explain the energy minimization methods in Green chemistry with examples. 7M  
b. What is green synthesis? Explain the green synthetic reactions of Adipic acid and Paracetamol. 7M
- OR
10. a. Explain the important 12 green chemistry principles? 7M  
b. Discuss the concept of zero pollution technologies using super critical fluid method. 7M