

# GBCS SCHEME

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18CH731

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023

## Electrochemical Technology

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define and explain the Faraday's laws. (10 Marks)  
b. Explain the mechanism of conduction in solids and liquids. (10 Marks)

OR

- 2 a. Compare the mechanism of conduction in metals and semiconductors. (10 Marks)  
b. Explain the concept of Reversible electrodes and extend their types. (10 Marks)

### Module-2

- 3 a. Define over potential and explain the types of over potential. (10 Marks)  
b. Construct the derivation of Butler-Volmer equation. (10 Marks)

OR

- 4 a. Explain about the polarization and its significance. (10 Marks)  
b. Explain about the electrical double layer with suitable model. (10 Marks)

### Module-3

- 5 a. Develop the construction and working, principle of potentiometric estimation. (10 Marks)  
b. Define Ion selective electrode and explain the construction and working of glass membrane electrode. (10 Marks)

OR

- 6 a. Determine the pH of a test solution by using Ion Selective Electrode (ISE) of glass electrode. (10 Marks)  
b. Define polarography and explain about the working principle of polarography. (10 Marks)

### Module-4

- 7 a. Define electrodeposition and explain about the electrodeposition of metal with suitable example. (10 Marks)  
b. Explain the process of electrodeposition of alloy with a suitable example. (10 Marks)

OR

- 8 a. Define fuel cell and outline the primary and secondary fuel cells with suitable example. (10 Marks)  
b. Explain the construction and working model of a fuel cell. (10 Marks)

### Module-5

- 9 a. Define electrowinning and explain working model and principle for extraction of metal. (10 Marks)  
b. Explain the features of electro-organic and electro-inorganic synthesis. (10 Marks)

OR

- 10 a. Explain about Bio-electrochemistry. (10 Marks)  
b. Outline the environmental electrochemistry. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.