

Enrollment No: _____

Exam Seat No: _____

C. U. SHAH UNIVERSITY

Summer Examination-2022

Subject Name: Electroanalytical Techniques

Subject Code: 5SC03ETC1

Branch: M.Sc. (Chemistry)

Semester: 3

Date: 25/04/2022

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator and any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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SECTION – I**Q-1 Attempt the Following questions (07)**

- a. Define electrolytic cell. 01
- b. State Faraday's first law. 01
- c. Define electroanalytical techniques. 01
- d. What do you mean by Electrogravimetric analysis? 01
- e. Write Nernst equation. 01
- f. Define diffusion. 01
- g. State the Ohm's law. 01

Q-2 Attempt all questions (14)

- a. Explain the instrumentation of voltammetry. 07
- b. Write a note on differential pulse voltammetry. 07

OR**Q-2 Attempt all questions (14)**

- a. State principle of coulometric & explain different coulometric titrations. 07
- b. Explain the conductometric sensors and biosensors. 07

Q-3 Attempt all questions (14)

- a. Write a note on potentiometric biosensors with example. 07
- b. Explain the second-generation mediator – based biosensors. 07

OR**Q-3 a. Name the three generation of Amperometric biosensors and explain the 07**

- first generation of oxygen electrode-based biosensors.
b. Give short note on diffusion transport. 07

SECTION – II

Q-4 Attempt the Following questions (07)

- a. Give any two applications of electrical double layer. 02
b. What is DME? 01
c. How many electrodes are used in voltammetric instruments? 01
d. the full form of TTF and TCNQ. 01
e. Who invented voltammetry? 01
f. Define polarography 01

Q-5 Attempt all questions (14)

- a. Discuss the coulometric analysis at controlled potential. 06
b. Explain the deposition potential & over potential or overvoltage. 08

OR

- Q-5** a. Discuss the determination of chloride, bromide and iodide in mixture by Amperometric titrations. 04
b. Explain square wave polarography. 07
c. Differentiate between voltaic cell and electrolytic cell with labelled diagram. 03

Q-6 Attempt all questions (14)

- a. Explain polarography with DME. 07
b. Write a short note on electrolysis. 07

OR

Q-6 Attempt all Questions

- a. Write a note on electrocapillary. 07
b. Explain electrical double layer. 07

