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ACS 555

**IV Semester M.Sc. Degree Examination, Sept./Oct. 2022
(Freshers and Repeaters) (CBCS – 2016-17 Syllabus)
APPLIED CHEMISTRY
Applied Electrochemistry**

Time : 3 Hours

Max. Marks : 70

- Note :** 1) Answer Part – A and **any four** from Part – B.
2) Figures to the **right** indicate marks.

PART – A

1. Answer the following sub divisions. **(9×2=18)**
- What are primary and secondary batteries ? Give an example for each.
 - Calculate the Energy density of a 2 kg battery discharging a current of 1.0 A with an average voltage of about 1.45V.
 - Write any two characteristics and applications of bio-sensors.
 - Explain the principle of electrophoretic painting.
 - Give the principle and applications of electroforming.
 - List the characteristics of good deposits.
 - Explain figure of merit in an electrolytic process.
 - Give the principle of brine electrolysis.
 - Illustrate the Kolbes synthesis.

PART – B

Answer **any four** of the following :

2. a) Give an account of construction and working of :
- Leclanche dry battery and
 - Zn-alkaline battery.
- Compare their merits.
- b) Why lithium is very widely used in battery industry ? Discuss the construction and working of lithium-ion battery. **(8+5=13)**

P.T.O.



3. a) What are ion-selective electrodes ? Give their analytical and biological applications.
- b) Discuss the construction and working of an H_2-O_2 fuel cell.
- c) Write a brief note on electrochemical communication in biological systems. **(5+5+3=13)**
4. a) Discuss the principle and procedure of electroplating of metals.
- b) Write a note on metal production by electrowinning.
- c) Outline the method of removal of dissolved chromium from liquors. **(4+4+5=13)**
5. a) Explain the production of metals carried out by electro refining process.
- b) Write a brief note on :
- Global warming and
 - Fixing of CO_2 .
- c) Give an account of electroless plating. **(3+4+6=13)**
6. a) Give an account of the following :
- Costing and technology of electrolytic process.
 - Electroorganic synthesis by reduction process.
- b) List the various electrolysis parameters and explain any two of them.
- c) Explain how the electroinorganic synthesis of ozone is carried out. **(6+4+3=13)**
7. a) How are the metal salts synthesized by anodic dissolution ?
- b) Discuss the technological developments related to electrode materials and membranes in a chlor-alkali industry.
- c) Explain the electro-inorganic synthesis of fluorine. **(4+6+3=13)**
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