



JAY-003-1103002 Seat No. _____
M. Sc. (Sem. III) (CBCS) Examination
December – 2019
(CPA) & (CPM)-302 : Chemistry
(Electro Analytical Techniques) (Common)
(New Course)

Faculty Code : 003
Subject Code : 1103002

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

Instructions :

- (1) All questions are compulsory.
- (2) All questions carry equal marks.

1 Answer the following : (any seven)

- (a) Give the principle of Voltammetry and classify it.
- (b) Draw a typical polarogram and label different currents.
- (c) Briefly discuss electroanalysis.
- (d) Give the principle of ion selective electrode and classify it.
- (e) What is Ilkovic equation ? What is significance of all the terms involved in it.
- (f) What are electroanalytical techniques ? Classify them with example.
- (g) What is electrochromatography ? List the applications of it.
- (h) Discuss the interferences arising during the use of glass electrode.
- (i) 4g of Ag is deposited when a current of 3A is passed for 20 minutes. Calculate the electrochemical equivalent of Ag.
- (j) What is amperometric titration ? Give its advantages and disadvantages.

2 Answer the following : (any two)

- (a) Describe electro-osmosis and give its important characteristics.
- (b) Define Faraday's first law of electrolysis and verify it theoretically. Calculate, if a current of 10A passed in a solution of AgNO_3 for 50 minutes, what is the amount of silver deposited on Cathode ? (Eq.wt.Ag = 0.00118)
- (c) Discuss dead stop method and rotating platinum electrode.

3 Answer the following :

- (a) Discuss the principle and working of a typical dC polarography.
- (b) What is controlled current coulometry ? Describe with suitable example and circuit diagram.

OR

- (a) Write notes on (i) Polarographic maxima and (ii) Anodic stripping voltametry.
- (b) Write notes on (i) Air gap electrode and (ii) Coated wire electrode.

4 Answer the following :

- (a) Discuss in detail on gel electrophoresis and high performance capillary electrophoresis.
- (b) Describe solid state membrane electrode in detail.

5 Answer the following : (any two)

- (a) Define dropping mercury electrode and half wave potential. Give the advantages and disadvantages of dropping mercury electrode.
- (b) Write a note on capillary zone electrophoresis.
- (c) What is electrogravimetry method ? What are the advantages of it over classical gravimetric method ? Explain ohmic potential.
- (d) Discuss the applications of electrogravimetric and coulometric methods.