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**JAY-003-1103004** Seat No. _____

# M. Sc. (Sem. III) (CBCS) Examination

**December - 2019**

## Chemistry : CPA - CPM - 302

*(Electro Analytical Techniques) (New Course)*

**Faculty Code : 003**

**Subject Code : 1103004**

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

**Instructions :** (1) All questions are compulsory.

(2) All question carry equal marks.

**1** Answer the following : (any **seven**) **14**

(a) What is Ilkovic equation ? What is the significance of all the terms involved in it ?

(b) Draw a typical polarogram and label different currents.

(c) Describe advantages and disadvantages of amperometric titrations.

(d) Discuss application of amperometric titrations.

(e) Give the application of electrochromatography.

(f) What is electrophoresis ? Give the types of electrophoretic method.

(g) Write a note on curtain electrophoresis.

(h) What are electroanalytical techniques ? Classify them with example.

(i) Give the comparison of coulometric and volumetric titration.

(j) Give the classification of ion selective electrodes.

**2** Answer the following : (any **two**) **14**

(a) What is the fundamental requirement of coulometric method ? Discuss controlled potential coulometry analysis with suitable example and circuit diagram.

(b) Define Faraday's first law of electrolysis and verify it theoretically.

(c) What are the advantages of electrogravimetric analysis of classical gravimetric method ? Explain ohmic potential.

3 Answer the following : 14

(a) Discuss different types of amperometric titrations in detail.

(b) Write a note on :

(i) Dead stop method

(ii) Rotating platinum electrode.

**OR**

3 (a) Discuss solid state membrane electrode in detail. 14

(b) Write a note on :

(i) Air gap electrode.

(ii) Coated wire electrode.

4 Answer the following : 14

(a) Discuss the principle and working of a typical dc polarography.

(b) (i) Discuss the application of polarography.

(ii) What are the advantages and disadvantages of dropping mercury electrode.

5 Answer the following : (any **two**) 14

(a) Discuss electro-osmosis and give its important characteristics.

(b) Discuss capillary gel electrophoresis in detail.

(c) Write a note on capillary isoelectric focussing.

(d) Give the principle of electrophoresis. Discuss classical gel electrophoresis and high performance capillary electrophoresis in detail.

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