



**GAO-142004**

Seat No. \_\_\_\_\_

**M. Sc. (Sem. II) Examination**

**March / April – 2019**

**MSCOC - 204 : Analytical Chemistry**

Time : 3 Hours]

[Total Marks : 70

**1 Answer the following:**

**14**

- (a) Describe the process of extracting metal chelates from aqueous to non-aqueous phase.

**OR**

Write a brief notes on accelerated and microwave –assisted extraction.

- (b) Explain the working phenomenon of Craig's counter-current distribution for extraction of analytes having similar partition coefficient.

**OR**

Discuss different steps of solid phase extraction technique for sample preparation

**2 Answer the following.**

**14**

- (a) State the principal of TLC and HPTLC & give their comparative assessment.

**OR**

Give the significance of plate theory and Van Deemter equation in chromatography.

- (b) What a brief note on counter-current chromatography for isolation of natural products.

**OR**

What are ion-exchangers ? Discuss the separation process and application of ion-exchange chromatography for Cation and Anion ?

**3 Answer the following :**

**14**

- (a) Explain in brief the component of a conductometer and give the procedure of conductivity measurement.

**OR**

Discuss complexometry and precipitation based on conductance measurement.

- (b) What is pH ? Give the construction of glass electrode with a neat diagram and discuss the process of pH measurement.

**OR**

Discuss the important of calibration of glass electrode and describe in short errors associated in pH measurement.

**4 Answer the following :**

**14**

- (a) Discuss the working mechanism of CO<sub>2</sub> and O<sub>2</sub> gassensing probe, Give their application in the analysis of environmental samples.

**OR**

Give the detail classification of metallic indicator and membrane indicator electron with suitable examples.

(b) Describe various applications of potentiometric titrations.

**OR**

State the principal, working mechanism and application of Calcium ion selective electrodes.

**5 Answer in brief : ( 1 mark each)**

**14**

- (1) Which factor influence the efficiency of chromatography analysis ?
  - (2) What is Normal Gaussian curve ?
  - (3) Define : Distribution ratio.
  - (4) What is hydrophobic micro-porous membrane ?
  - (5) Name the factor that affect the conductivity of an electrolyte solution.
  - (6) What do you understand by cell potential ?
  - (7) Give the principal of Kohlrausch's law.
  - (8) State two factors which are responsible for analyte binding on solid phase sorbent.
  - (9) What are the homogenous crystalline membrane electrodes ?
  - (10) The extraction efficiency is independent of the original concentration of the solute/analyte. - true or False.
  - (11) Which solvent are commonly used for protein precipitation ?
  - (12) What is the composition of glass membranes for pH measurement ?
  - (13) Why equivalent conductance ( $\lambda_{\text{max}}$ ) for a weak electrolyte cannot be determined experimentally?
  - (14) State the significance of capacity factor in chromatography.
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