



UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program / Sixth Semester – 2020

Paper: Analytical Chemistry

Course Code: CHEM-319 Part – I (Compulsory)

Time: 15 Min. Marks: 10

Roll No. in Fig.

Roll No. in Words.

Signature of Supdt.:

ATTEMPT THIS PAPER ON THIS QUESTION SHEET ONLY.

Division of marks is given in front of each question.

This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the correct choice.

(10x1=10)

- A. Which type of liquid-liquid extraction is efficient?**
a) Multistage co current (b) Multistage counter current
c) Multistage cross current (d) Single stage
- B. _____ is the extractant which is lighter than water**
a) Carbon disulphide (b) Chloroform
c) Carbon tetrachloride (d) Diethyl ether
- C. Which of the following elements is best analysed by atomic absorption spectroscopy?**
a) Silicon (b) Iron (c) Nitrogen (d) Xenon
- D. The basic structural unit for wide variety of recently developed anion exchange resins is**
a) Acrylic resins (b) Divinyl benzene
c) Diphenyl ether (d) Sulphonated styrene
- E. A process being NOT occurred in hollow cathode lamp is**
a) Sputtering (b) Emission of sharp lines
c) Absorption of radiation (d) Excitation of atoms
- F. Which is the correct order of events in FES?**
(a) Desolvation-Vapourization-atomization-excitation-emission
(b) Vapourization-desolvation-atomization-excitation-emission
(c) Desolvation-atomization-vapourization-excitation-emission
(d) None
- G. Which zone of flame is used in flame photometry**
(a) Preheating zone (b) Interconal zone
(c) Primary reaction zone (d) Secondary reaction zone
- H. The strong acid cation exchange resin has _____ group attached to the polymeric matrix**
(a) Phenolic (b) Carboxylic (c) Sulphonic (d) Ketonic
- I. Ion exchange capacity among univalent anions has been found to decrease in the following order**
(a) Iodide > nitrate > bromide
(b) Iodide > bromide > nitrate
(c) Nitrate > bromide > Iodide
(d) Nitrate > iodide > bromide
- J. Dextran is generally used for the separation of _____ in gel chromatography**
(a) Lipids (b) Carbohydrates (c) Proteins (d) Fats



ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2- Attempt all Short questions

(10x2=20)

- i. How are samples introduced in capillary electrophoresis system?
- ii. Define and explain the Efficiency of solvent extraction?
- iii. Define electrophoretic mobility? Derive its unit.
- iv. What is the role of complexing agent in metal extraction?
- v. Define Nernst distribution law? Give an example.
- vi. Why atomic absorption spectroscopy is limited to metals only?
- vii. Why gel chromatography is also known as size exclusion chromatography?
- viii. What are ion exchangers? Give one example of each type?
- ix. What are the limitations of flame photometry?
- x. What is the difference between atomic absorption and flame emission spectroscopy?

Q 3. Long Questions

(5x6 =30)

- a) Explain briefly all steps involved in flow injection analysis?
- b) What are different types of ion exchange resins? Explain cross linkage in ion exchange resin with the help of an example.
- c) Explain Zeta potential in detail on the basis of electroosmotic flow?
- d) Give the principle and applications of Gel chromatography?
- e) Discuss different events occurring in flame emission spectroscopy with the help of a diagram?
- f) Discuss Hydride generation method in detail specially emphasizing on its principle?