

**BACHELOR OF SCIENCE (CBCS-2018 COURSE)**  
**T. Y. B. Sc. Sem-VI :SUMMER- 2022**  
**SUBJECT : CHEMISTRY : ANALYTICAL CHEMISTRY-II**

Day : Saturday  
Date : 9/7/2022

**S-18473-2022**

Time : 11:00 AM-02:00 PM  
Max. Marks : 60

**N. B. :**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

**Q. 1** Attempt **ANY TWO** of the following: **(12)**

- a) What is solvent extraction? Define distribution ratio and distribution coefficient and derive a relationship between them.
- b) What is FES? What are the various events that occur when a solution containing anion is atomized through flame?
- c) Explain the principle and the technique of HPLC with well labeled diagram.

**Q. 2** Attempt **ANY TWO** of the following: **(12)**

- a) Draw a schematic diagram of gas chromatography and describe its different components.
- b) Explain the principle and technique of paper chromatography.
- c) Discuss in brief about ion-exchange chromatography. Explain the classification of ion exchange.

**Q. 3** Attempt **ANY TWO** of the following: **(12)**

- a) A mixture of A, B and C organic compounds are analyzed by GLC. The peak areas were found to be  $20\text{cm}^2$ ,  $15\text{cm}^2$  and  $30\text{cm}^2$  respectively. Calculate the percentage composition of the mixture.
- b) A metal chelate was extracted to the extent of 80% when equal volumes of aqueous and organic phase were shaken together. What will be the % extraction? If the volume of the organic phase is double.
- c) For a given system, calculate the percent extracted for a volume ratio  $\frac{v_o}{v_a}$  of  
i) 1 and ii) 10, for a single extraction. (Given  $D = 10$ ).

**Q. 4** Attempt **ANY THREE** of the following: **(12)**

- a) Explain with diagram premixed burners used in flame emission spectroscopy.
- b) Write a note on Flame Ionization Detector used in GC.
- c) Discuss the various steps involved in column chromatography.
- d) Describe the match box model of chromatographic separation.

**Q. 5** Attempt **ANY FOUR** of the following: **(12)**

- a) Define and explain the following terms:  
i) Monochromator ii) Chemical interference iii) Spectral interference
- b) Write a note on percent extracted.
- c) Explain in brief about batch extraction method of solvent extraction.
- d) Give the principle of FES.
- e) Write a note on comparison of advantages and disadvantages of paper chromatography with TLC.
- f) Discuss the various types of pumps used in HPLC.

\* \* \* \* \*