

SUBJECT : FUNDAMENTAL OF ANALYTICAL CHEMISTRY

Day : Saturday  
Date : 20/04/2019

S-2019-1168

Time : 03.00 PM TO 06.00 PM  
Max. Marks. : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Attempt both the sections in **SEPARATE** answer books.

SECTION – I

- Q.1** Attempt any **THREE** of the following: (15)
- a) Explain any one method for the extraction of solute from aqueous phase.
  - b) Discuss the principle of ion-exchange chromatography. Describe what is meant by cation and anion exchange resins.
  - c) Discuss any two applications of HPLC in detail.
  - d) Write a note on match box model and its application to Chromatography.
  - e) Explain multiple extractions are better than single extraction.
- Q.2** A) Attempt any **ONE** of the following: (05)
- a) Describe FID detector of gas chromatography with a suitable diagram.
  - b) Explain column chromatography in detail.
- B) Solve any **TWO** of the following: (10)
- a) A gaseous mixture composed of o -Xylene, m-Xylene and p-Xylene was subjected to chromatographic separation. The peak areas corresponded was measured as 45, 18 and 10 cm<sup>2</sup> respectively. If the weight of sample mixture is 6 mg. Find the weight in mg of each constituent.
  - b) Calculate the distribution ratio (D) and % E, when 40 ml of an aqueous solution of 0.2 m organic compound is shaken with 20 ml of ether. It is reported that 1.5 milimoles of organic compound remain in the aqueous layer after extraction.
  - c) A gaseous mixture composed of benzene, toluene and xylene is analyzed by GC. The peak areas were found to be 40 cm<sup>2</sup>, 25 cm<sup>2</sup> and 55 cm<sup>2</sup> respectively. Calculate the percentage composition of the mixture.

SECTION – II

- Q.3** Attempt any **THREE** of the following: (15)
- a) Define the principle of air pollutants and explain sources and sink of any two air pollutants.
  - b) Discuss any one pre-concentration technique of water samples.
  - c) Write a note on phot chemical smog.
  - d) Give preservation techniques for various parameters of water samples.
  - e) What do you understand by ozone depletion? Explain the impacts of ozone holes on the human health.
- Q.4** Attempt any **THREE** of the following: (15)
- a) Give an account of biodegradation of pesticides.
  - b) Discuss the various segment of environment in detail.
  - c) Describe the methods for estimation of the ammonia in water sample.
  - d) Write a note on organic pollutants.
  - e) Explain the following:
    - i) Eutrophication
    - ii) Acid rain