## SET B

Unique Paper Code:	42173923-OC
Name of the paper:	SEC-Basic Analytical Chemistry
Name of the Course:	B.Sc. (Prog.)
Semester:	IV
Duration: 2 hour	Maximum Marks: 38

## Attempt ANY 2 questions in all

- Q1. (a) What is sampling? What are the various steps involved in preparation of laboratory sample?
  - (b) Give a detailed account of the common systematic errors in measurement.

(c) Differentiate between accuracy and precision. Accurate values are generally precise but precise values need not be always accurate. Justify with an example.

(d) What do you mean by significant figures? Do as directed:
(i)Express the result in correct number of significant figures:
0.00213 X 47000/1202.5 = 0.08325156
(ii) Round off the value to 4 significant figures: 9.7385
(iii) Express in scientific notation: 0.0004563

5, 5, 5, 4

Q2. (a) What is the significance of  $R_f$  value in chromatography? What are the factors affecting  $R_f$  value?

(b) What are two dimensional TLC and high-performance thin layer chromatography (TLC)? Give any 2 materials used as adsorbents in TLC.

(c) Briefly explain the characteristics of resin. Explain how their total ion exchange capacity is determined.

(d) Explain the dentacity of the ligand involved in the complex formation. Draw the structure of Ca-EDTA and Ca-EBT complex.

5, 5, 5, 4

P.T.O.

Q3. (a) Explain the composition of soil. What is importance of water in soil?

(b) Give the statement of Lambert-Beer's law. A solution of concentration 0.002 M is placed in a cell of optical path length 1.00 cm. It shows absorbance of 0.156 at 346 nm. Calculate the molar absorptivity of the solution at the given wavelength.

(c) What is the significance of Biochemical oxygen demand of water? How BOD can be determined?

(d) Why does water have to be disinfected? Explain three mainly used methods for water disinfection.

5, 5, 5, 4

- Q4. (a) Explain the following terms:
  - (i) Standard curve
  - (ii) Void volume
  - (iii) Retention time
  - (iv) Titrand
  - (v) Elution

(b) How pH and alkalinity of a soil sample can determine, give experimental details.

(c) Briefly explain the following (ANY TWO):

(i) Flame emission photometry

(ii) Gas chromatography

(iii) Analysis of gasoline

(d) Calculate the absolute and relative error in % and ppt (parts per thousand) in the following:

Measured value		Accepted value	
i)	22.62 g	22.57 g	
ii)	45.02 ml	45.3 ml	

5, 5, 5, 4

Х