5. (*a*) Explain the construction and working principle of dropping mercury electrode. Write advantages and limitations of electro-chemical methods of analysis.

Or

(*b*) State and explain Ilkovic equation. How electro chemicals are useful for the study of reversible reaction ?– Give suitable example.

6. (*a*) Explain the classification of drugs giving suitable examples. Write the applications of gas chromatographic methods for the analysis of drug samples.

Or

(*b*) How statistical methods are helpful for the analysis of errors in analytical experiment.

M.Sc.–Chem-IVS (CC-509)

2018

Time : 3 hours

Full Marks : 80

Answer from **both** the Sections as per direction

The figures in the right-hand margin indicate marks

Candidates are required to answer in their own words as far as practicable

(ANALYTICAL CHEMISTRY)

SECTION – A

1. Answer any *four* questions from the following : 4 × 4

(*a*) Explain the working principle of Thermo Gravimetric Analyser (TGA).

(*b*) Explain any one amperometric titration curve with an example.

(*c*) Write the applications of Thin Layer chromatography in the analysis of food samples.

(*d*) How do you determine the lime content of soil ?

(*e*) How do you determine aniline point of a fuel ?

(*f*) How do you determine the calorific value of water gas ?

Or

2. Answer *all* questions from the following : 2 × 8

(*a*) Write the principle of Differential Thermal Analyser (DTA).

(*b*) What do you understand by current maxima in electrochemical techniques ?

(*c*) How do you perform microscopic examination of food adulterants ?

(*d*) Write the major composition of soil.

(*e*) Define the term median of a data.

(*f*) Define Flash point of a fuel.

(*g*) Define calorific value of a solid fuel.

(*h*) Write the composition of producer gas.

SECTION – B

Answer **all** questions : 16 × 4

3. (*a*) Describe the 'Theory' instrumentation and working principle of differential thermo-gravimetric Analyser (DTGA). Explain the DTGA curve of Barium.

Or

(*b*) Explain the general principles of thermal methods of analyser. Make a comparison between the information arrived from TGA and DTGA with suitable examples.

4. (*a*) Write the working principle of HPLC. Explain the applications of HPLC for the analysis of pesticides.

Or

(*b*) How do you determine magnesium, manganese and sulphur in soil samples.