

Q1. Answer any two of the following:

- Discuss in brief batch and continuous mode in automated analyzers.
- Describe the process of stopped flow for reaction rate measurement.
- State and explain the principle and importance of FIA.
- Write a short note on process analytical chemistry. Compare and discuss off-line, at-line and on-line analysis.

14 marks

Q2. Answer any two of the following:

- Discuss methods to determine moisture in food samples.
- Write a short note on adulteration of milk and milk products.
- Describe the non-instrumental and instrumental method for analysis of proteins in the food samples.
- Explain methods to characterize fats and oils.

14 marks

Q3. Answer any two of the following:

- State the category, properties and methods to analyze any one drug.
  - Ritonavir
  - Moxifloxacin hydrochloride
- Discuss the importance and scope of IR spectroscopy in the analysis of pharmaceuticals.
- Describe the utility of fluorescence detector in HPLC for pharmaceutical industry.
- State the category, properties and methods to analyze any one drug.
  - Proguanil hydrochloride
  - Clonidine hydrochloride

14 marks

Q4. Answer any two of the following:

- Describe the method for analysis of calcium, sodium and potassium in fertilizers.
- Explain in detail determination of organochlorine pesticides.
- Give classification of soaps and detergents, explain with suitable examples.
- Write a brief note on various types of fertilizers.

14 marks

Q5. Answer in brief: (1 mark each)

- What do you understand by "Automation"?
- For medium dispersion  $D=1-3$ , True or False?
- Significance of peristaltic pump in FIA.
- What is the feed-forward mechanism?
- Define: - carry-over
- Definition and significance of saponification value.
- What does Polenski value signify?
- Name two antidiabetic agents.
- What is the standard format of food labels for nutrition information?
- Give the full form of: (i) AOAC (ii) ANDA
- Name two organophosphorus pesticides.
- Define: - Eutrophication
- What is represented by 'Nifext' in food analysis?
- Name two water insoluble vitamins.

14 marks