

PARUL UNIVERSITY
FACULTY OF APPLIED SCIENCE
M.Sc., Summer 2017-18 Examination

Semester: 1
Subject Code: 11205104
Subject Name: Analytical Chemistry-I

Date: 28/05/2018
Time: 10:30 am to 1:00 pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

- Q.1. A) Answer in detail: (08)**
(a) What is Chromatography? Give its types. Explain its mechanism and application of adsorption.
(b) Describe the role and mechanism of Glass electrode for H⁺-ion sensing.
- Q.1. B) Answer the following questions (Any two) (04)**
(a) Write short answers: (04)
1. What are electrodes? Give their types.
2. What are Ion-selective electrodes? Mention one example.
(b) Write a short note on Size Exclusion Chromatography. (04)
(c) Write a short note on Amperometry titrations. (04)
- Q.2. A) Answer the following questions. (04)**
(a) Write short answers: (04)
1. What is Gas Chromatography (GC)? Mention types of columns.
2. Write the principle of Liquid Chromatography (LC).
(b) Explain Super Critical Fluid Chromatography (SFC). (04)
- Q.2. B) Answer the following questions (Any two) (03)**
(a) Write short note on Detectors used in Gas Chromatography (GC). (03)
(b) Explain Solvent delivery systems in Liquid Chromatography (LC). (03)
(c) Describe Capillary Gas Chromatography. (03)
- Q.3. A) Answer in detail: (08)**
(a) Write the principle and applications of Thermogravimetry Analysis (TGA).
(b) Describe Principle and applications of Thermometric titrations.
- Q.3. B) Answer the following questions (Any two) (04)**
(a) Write short answers: (04)
1. Mention factors affecting Thermogravimetry Analysis (TGA).
2. Mention factors affecting Thermo Mechanical Analysis (TMA).
(b) What is Thermobalance? Explain its working mechanism. (04)
(c) Explain Instrumentation involved in Thermo Mechanical Analysis (TMA). (04)
- Q.4. A) Answer the following questions. (04)**
(a) Write short answers: (04)
1. What is Unit cell? Give its types.
2. Write Bragg's equation with all terms involved.
(b) Explain Laue method. (04)
- Q.4. B) Answer the following questions (Any two) (03)**
(a) Write a note on Low energy electron diffraction. (03)
(b) Write a short note on Debye-Scherrer method for X-Ray structure analysis. (03)
(c) Describe scattering of neutron by solids. (03)