

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**M.Sc. Winter 2019-20 Examination**

**Semester: 2**  
**Subject Code: 11205154**  
**Subject Name: Analytical Chemistry-II**

**Date: 12/12/2019**  
**Time: 2.00 pm to 4.30 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) Essay type/ Brief note (4x2) (Each of 04 marks) (08)**  
 (a) Write a note on the different types of errors  
 (b) Discuss in detail the GLP Principles and the documentation of laboratory work
- Q.1. B) Answer the following questions (Any two) (04)**  
 (a) Brief note (2x2) (Each of 02 marks)  
 1. Distinguish between mean and median  
 2. Define standard deviation and Variance  
 (b) Explain the calibration of a) UV spectrophotometer b) pH meter (04)  
 (c) Write a note on SOP (04)
- Q.2. A) Answer the following questions. (04)**  
 (a) Brief note (Each of 02 marks)  
 1. What is principle of mass spectrometry  
 2. Define the base peak and molecular ion peak of a mass spectrum?  
 (b) Short note on different types of ion source in mass spectrometer (04)
- Q.2. B) Answer the following questions (Any two) (03)**  
 (a) Multiple choice questions (Each of 01 marks)  
 1. What does IS14000 stand for  
 a) Quality management b) Environmental management c) Sustainable events d) None  
 2. Which list below gives only spin active nuclei? a)  $^2\text{H}$ ,  $^{12}\text{C}$ ,  $^{19}\text{F}$  b)  $^1\text{H}$ ,  $^2\text{H}$ ,  $^{12}\text{C}$  c)  $^1\text{H}$ ,  $^{13}\text{C}$ ,  $^{19}\text{F}$  d)  $^1\text{H}$ ,  $^{12}\text{C}$ ,  $^{19}\text{F}$   
 3. Which of the following separate the ions according to their mass-to-charge?  
 a) Ion source b) Detector c) Magnetic sector d) None of these  
 (b) Define Chemical shift (03)  
 (c) Write a short note of mass analyzers (03)
- Q.3. A) Essay type (Each of 04 marks) (08)**  
 (a) Write a note on microwave spectroscopy  
 (b) Discuss stokes, antistokes and Rayleigh scattering in Raman Spectroscopy
- Q.3. B) Answer the following questions (Any two) (04)**  
 (a) Brief note (Each of 02 marks)  
 1. Define Fermi Resonance  
 2. Differentiate Overtone and combination band  
 (b) Explain the applications of IR Spectroscopy (04)  
 (c) Differentiate Raman and IR Spectroscopy (04)
- Q.4. A) Answer the following questions. (04)**  
 (a) Short note (Each of 02 marks)  
 1. Explain the Biochemical aspects of Arsenic, Cadmium, Lead, Mercury, Carbon Monoxide  
 2. Discuss the Inorganic and organic components of soil  
 (b) Explain the methods to control industrial air pollution (04)
- Q.4. B) Answer the following questions (Any two) (03)**  
 (a) Short note/ Multiple choice questions. (Each of 01 marks)  
 1. BOD is -----  
 2. Chlorofluorocarbon is used in -----  
 3. PAN is -----  
 (b) Write a note on COD (03)  
 (c) What is Greenhouse effect (03)