Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

B.Sc., Supplementary, Winter 2017-18 Examination

Semester: 2 **Date: 08/01/2018**
Subject Code: 11105153 **Time:10.30 am to 1.00 pm**
Subject Name: Basic Instrumentation Techniques **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) What is Spectroscopy. Define various types of Spectroscopy.
(b) What is Electromagnetic radiation. Write the properties of Electromagnetic radiations.

Q.1. B) Answer the following questions (Any two)
(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
1. Differentiate between AAS and FES.
2. Write the advantages of AAS over FES.
(b) Write the units of Frequency,Wavelength & Wave number and describe their inter conversion. **(04)**
(c) Define Wave length,Wave number,amplitude & frequency. **(04)**

Q.2. A) Answer the following questions.
(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
1. Calculate the frequency of radiation in Hertz of wavelength 3500A°.
2. Explain the function of monochromator.
(b) Define Reflection, refraction, scattering & dispersion. **(04)**

Q.2. B) Answer the following questions (Any two)
(a) Short note/ Multiple choice questions. (Each of 01 marks) **(03)**
1. How many types of burners are used in AAS
2. Distance between two consecutive peaks in a wave is called as
3. Acetylene –nitrous oxide flame produces temperature of about
(b) Name the methods of producing monochromatic radiations. **(03)**
(c) Explain principle, instrumentation of FES. **(03)**

Q.3. A) Essay type/ Brief note (4x2) (Each of 04 marks) **(08)**
(a) Types of shift observed in UV spectroscopy
(b)Describe the types of Electronic transitions.

Q.3. B) Answer the following questions (Any two)
(a) Short note/ Brief note (2x2)/ Schematically label the figures (2x2) (Each of 02 marks) **(04)**
1.Describe the Limitations of IR spectroscopy.
2. Describe Absorption and emissions.
(b) Explain principle & application of UV Spectroscopy. **(04)**
(c) Explain principle & application of IR Spectroscopy. **(04)**

Q.4. A) Answer the following questions.
(a) Short note/ Brief note (2x2)/ Fill in the blanks. (Each of 02 marks) **(04)**
1. Beer and Lamberts Law
2. Write a note on Chromophore & Auxochrome.
(b) Define Finger print region in IR Spectroscopy. **(04)**

Q.4. B) Answer the following questions (Any two)
(a) Short note/ Multiple choice questions. (Each of 01 marks) **(03)**
1. Write the full forms of AAS and FES
2.Write names of parts of FES instrument.
3. Beer's law is mainly based on
(b) Write the applications of AAS and FES. **(03)**
(c) Differentiate between IR & UV spectroscopy. **(03)**