Seat No:_____ **Enrollment No:_____**

PARUL UNIVERSITY

FACULTY OF APPLIED SCIENCE

B.Sc. Summer 2017-18 Examination

Semester: 2 **Date: 14/05/2018**
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) Write in detail. **(08)**
(a). Classify the General Instrumental methods.
(b). Explain the Interaction of electromagnetic radiation with matter.

Q.1. B) Answer the following questions (Any two)
(a) Write short answers: **(04)**
1. Write only the principle of Flame Emission Spectroscopy (FES).
2. Write only the principle of Atomic Absorption Spectroscopy (AAS).
(b) Differentiate between FES and AAS. **(04)**
(c) Write the short note on Instrumentation of FES. **(04)**

Q.2. A) Answer the following questions.
(a) Write short answers: **(04)**
1. Give the regions of spectrum for UV-Vis and IR spectroscopy.
2. Mention limitations of IR-Spectroscopy.
(b) Mention the applications of FES. **(04)**

Q.2. B) Answer the following questions (Any two)
(a) Mention the main advantages of Instrumental methods over chemical analysis. **(03)**
(b) What is Electromagnetic radiation? Give its types. **(03)**
(c) Mention the general properties of Electromagnetic radiation. **(03)**

Q.3. A) Write in detail. **(08)**
(a). Draw the Instrumentation of AAS.
(b). Mention the advantages of AAS over FES.

Q.3. B) Answer the following questions (Any two)
(a) Write short answers: **(04)**
1. State Beer-Lambert's law. Mention its uses.
2. Describe the source used in IR-Spectroscopy.
(b) Define Transition. Write short note on (pi) π → (pi) π* transition. **(04)**
(c) Explain shapes of UV-Absorption curves. **(04)**

Q.4. A) Answer the following questions.
(a) Write short answers: **(04)**
1. State the principle of IR-Spectroscopy.
2. Differentiate between IR and UV spectroscopy.
(b) Write short note on instrumentations of IR-Spectroscopy. **(04)**

Q.4. B) Answer the following questions (Any two)
(a) Write short note on (sigma) σ → (sigma)* σ * transition. **(03)**
(b) State the uses of UV-Visible spectroscopy. **(03)**
(c) Write short note on n→ (sigma) σ * transition. **(03)**