

**PARUL UNIVERSITY**  
**FACULTY OF APPLIED SCIENCE**  
**B.Sc. Winter 2018-19 Examination**

**Semester: 1**  
**Subject Code: 11102101**  
**Subject Name: (Biophysics and Instrumentation)**

**Date: 22-12-2018**  
**Time: 10:30am to 01:00pm**  
**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) Brief note** (08)
- (a) Write a brief note on Principle and application of Flame Photometry
  - (b) Write a brief note on TEM
- Q.1. B) Answer the following questions (Any two)**
- (a) Schematically label the figures (04)
    1. Draw a labeled diagram of Phase contrast microscopy
    2. Draw a labeled diagram of Ascending paper chromatography
  - (b) Write a short note on Ion Exchange chromatography (04)
  - (c) Write a short note on Isoelectric Focusing (04)
- Q.2. A) Answer the following questions.**
- (a) Fill in the blanks (04)
    1. Electrophoresis is a technique used for separation of -----
    2. The PAGE electrophoresis is used to separate-----
  - (b) Write a short note on Agarose gel electrophoresis (04)
- Q.2. B) Answer the following questions (Any two)**
- (a) Multiple choice questions. (03)
    1. The mobile phase in Gas-liquid chromatography is
      - A. Gas      B. solid
      - C. liquid    D. none of the above
    2. The linear relationship between the absorbance and concentration of solution is give by
      - A. Beer-Lambert's law      B. Bio-Savart's law
      - C. Both A and B              D. none of the above
    3. The metabolite analysis can also be carried out by
      - A. NMR                              B. paper chromatography
      - C. Thin layer chromatography    D. None of the above
  - (b) Write a short note on Thin layer chromatography (03)
  - (c) Write a short note on Circular Dichorism (03)
- Q.3. A) Brief note** (08)
- (a) Write a brief note on Dark field microscopy
  - (b) Write a brief note on spectrophotometer
- Q.3. B) Answer the following questions (Any two)**
- (a) Schematically label the figure (04)
    1. Draw a labeled diagram of Fluorescence microscopy
    2. Draw a labeled diagram of Isoelectric focusing
  - (b) Write a short note on Electrophoresis (04)
  - (c) Write a short note on PAGE (04)
- Q.4. A) Answer the following questions.**
- (a) Fill in the blanks (04)
    1. The sample holder in spectrometer is -----
    2. The ----- of the sample is measured in UV-Visible spectroscopy
  - (b) Write a short note on radial and two dimensional paper chromatography (04)
- Q.4. B) Answer the following questions (Any two)**
- (a) Multiple choice questions (03)
    1. Flame atomic absorption spectroscopy is used for analysis of
      - A. Fe                      B. Mn
      - C. Cu                     D. All of the above
    2. PAGE electrophoresis is also called as

- A. Native-PAGE                      B. SDS-PAGE  
C. Both A and B                      C. None of the above
3. The separation of macromolecules under the influence of electric field is called  
A. Electrophoresis                      B. Photolysis  
C. Both A and B                      D. None of the above
- (b) Write a short note on Two dimensional Electrophoresis                      **(03)**  
(c) Write a short note on Beer-Lambert's law                      **(03)**