**ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE (AUTONOMOUS**

**CUDDALORE – 607001**

**PG & RESEARCH DEPARTMENT OF BIOCHEMISTRY**

**SUBJECT:** ANALYTICAL BIOCHEMISTRY

**SUB CODE:** PBC807S

**CLASS:** I M.Sc BIOCHEMISTRY

**STAFF INCHARGE:** Mr.A.LAWRANCE & Ms. R.ANITHA

## SECTION A

### I. ANSWER IN ONE SENTENCE

1. Define beer-Lamberts law.

2. Define frequency.

3. Give the principle of Flame photometer?

4. What is meant by Northern blotting?

5. Define radiation half-life.

6. What are photodiodes?

7. Mention few DNA binding dyes.

8. What is λ-max?

9. Give one use of RIA?

10. What is a chromophore?

11. Why prism is used in UV-Visible spectrometer?

12. Why blank is used?

13. Define monochromatic light.

14. Which analytical technique is used to estimate sodium?

15. In western blotting, sample proteins are separated using _____

16. What are the techniques use to transfer DNA onto nitrocellulose paper?

17. What radioisotope is used for treating cancer tumors and cells?

18. Define radioactivity.

19. What is the purpose of RIA?

20. Define the term retention time.

21. What is cation exchanger?

22. Give one example for ligand.

23. Define chromatogram.

24. What is POP and POPOP?

25. What is calorimetry?

26. Define the term “Roentgen”.

27. Define zwitter ion?

28. What are solubilizers

## SECTION B

**II. ANSWER THE FOLLOWING**

1. Explain the applications of UV-visible spectrophotometer.

2. What is autoradiography?

3. What are the basic concepts and applications of Northern blot?

4. What are the uses of radioactivity and safety measures?

5. Explain RIA?

6. Explain the principle, instrumentation and applications of flame photometry.

7. Discuss on principle and applications of spectroflurimeter.

8. How density gradient centrifugation perfomed? List out its applications.

9. Write a note on liquid scintillation counter.

10. What is meant by Quenching?

11. Illustrate the electromagnetic spectrum.

12. Give the significance of extinction of co-efficient.

13. Give an account on scintillation counter.

14. Write an account of Radioimmuno assay.

15. Mention the difference between spectrofluorometry and spectophotometry.

16.. How do you separate DNA molecules by Southern blotting

17. Comment i) Quenching ii) Determination of counting efficiency

18. Give an account on isoelectric focusing.

19. Comment on cellulose acetate electrophoresis.

20. Explain immune affinity chromatography.

21. Comment on Atomic Absorption spectroscopy.

22. Discuss the principle and technique in molecular exclusion chromatography.

23. Comment on huminometry.

24. Explain the working principle of Analytical ultracentrifuge.

25. Explain the technique and application of Affinity chromatography.

26. State Beer-Lambert's law

27. Discuss phosphorescence and Fluorescence.

28. Write a note on density gradient centrifugation.

29. Write about differential centrifugation.

30 What are the different factors that affect electrophoretic mobility

31. Write briefly on isoelectric focusing.

32. Give the principle and applications of Thin layer chromatography

33. Write a note on Radioactive half life

34. Discuss the units of Radioactivity.

## SECTION C

## III. ANSWER THE FOLLOWING

1. Discuss affinity chromatography with applications.

2. How is SDS-PAGE used for the determination of molecular weight of proteins?

3. Explain about autoradiography with applications.

4. Explain the instrumentation and applications of visible absorption spectroscopy?

5. How will you detect & quantify radioactivity using scintillation counting method?

6. Describe the components of an Ultracentrifuge and mention the applications

7. Discuss on application of radio isptopes in metabolism & clinical studies.

8. Write in detail about gel filtration chromatography.

9. Explain spectroflurimeter. with applications.

10. Discuss the following chromatographic techniques.

    a) Immune affinity b) Ion-exchange

11. Give an elaborate account on iso-electric focusing.

12. Describe GM counter and its application.

13. Derive Henderson-Hasselbach equations.

14. Explain the working principle of column chromatography.

15. Explain the deduction and measurement of radio activity.

16. Elaborate the principle and applications of HPLC.

17. Explain SDS –PAGE electrophoresis.

18. Describe the role of two dimensional gel electrophoresis in enzyme purification.

19.. Describe the principle, instrumentation and application of spectrophotometry.

33. Explain the principle and application of atomic absorption spectrophotometer.

34. How do you analyze proteins expression in eukaryotic cell by Western blot?

35. Write an account of measurement of radioactivity.

36. Give the importance of autoradiography in clinical diagnosis

37. Write short notes on the principles and applications of a) Basic principles of PCR

b) Western blotting

38. Discuss the different types of radioactive measurements.

39. How can you measure the tritium labeled thymidine incorporation using scintillation counter?

40. Explain concepts and applications of Southern and Northern blotting techniques.