

STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2015 –2016)

SUBJECT CODE: 15BT/AE/BI45

B.Sc. DEGREE EXAMINATION, APRIL 2017
BRANCH V(a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY
FOURTH SEMESTER

COURSE : ALLIED – ELECTIVE
PAPER : BIOINSTRUMENTATION
TIME : 3 HOURS **MAX. MARKS: 100**

SECTION-A

A. ANSWER THE FOLLOWING **18 Marks**
I. Choose the correct answer **(1x5=5)**

1. Moving boundary electrophoresis was first introduced by
a. Jansen, b. Tiselius, c. Arnold, d. Robert Hook
2. Erythrocytes are separated using,
a. TLC, b. Electrophoresis, c. Ultra centrifuge, d. Small bench centrifuge.
3. In spectrophotometer the sample is taken in
a. Column, b. Test tube, c. Capillary tube, d. cuvette
4. FIGE is used for the separation of
a. Chlorophyll, b. Ribosomes, c. Large DNA, d. Viruses
5. Hydrophobic stationary phase is used in
a. GLC, b. TLC, c. RPHPLC, d. Column chromatography

II. Fill in the blanks: **(1x5=5)**

6. Periodic inversion of electric field in one dimension is the principle involved in _____.
7. _____ is the formula for calculating centrifugal force.
8. Helium is the commonly used _____ in GLC.
9. The sedimentation coefficient unit is _____.
10. For purifying proteins _____ chromatography is used.

III. State True or False **(1x4=4)**

11. Only coloured samples can be used in Colorimeter.
12. In GLC the mobile phase is liquid.
13. TLC plates are coated with calcium carbonate.
14. Agarose gel is used in electrophoresis.

IV. Match the following **(1x4=4)**

- | | |
|------------------------------|------------------|
| 15. Acetone | Proteins |
| 16. Coomassie Brilliant blue | Ultra centrifuge |
| 17. Ninhydrin | Chlorophyll |
| 18. Ribosomes | Amino acid |

V. ANSWER ANY SIX OF THE FOLLOWING QUESTIONS IN 50 WORDS EACH:**(6x3=18)**

19. What is sedimentation rate? What are the factors that will affect it?
20. What are Zwitterions? Explain with an example.
21. Explain the importance of capillary electrophoresis.
22. What is the principle in Ion-Exchange chromatography? Give example of any two ion exchangers.
23. Mention the different types of paper chromatography and any one advantage for each.
24. What is absorption spectrum and emission spectrum?
25. What is differential centrifugation?
26. Write notes on Field Inversion Gel electrophoresis.
27. What are rotors? Explain any two types.

SECTION-B**ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS IN ABOUT 200 WORDS EACH. DRAW DIAGRAMS WHEREVER NECESSARY.****(4x6=24)**

28. Explain Beer-Lambert's law.
29. Explain density gradient centrifugation.
30. What is the principle behind affinity chromatography? Describe how enzymes can be purified by this.
31. Discuss the principle and technique of immuno electrophoresis.
32. Draw and explain the instrumentation of GLC.
33. Draw and explain the construction of photo electric colorimeter.

SECTION-C**ANSWER ANY TWO OF THE FOLLOWING QUESTIONS IN ABOUT 1000 WORDS EACH. DRAW DIAGRAMS WHEREVER NECESSARY.****(2x20=40)**

34. Describe the principle, construction, detection of sample and applications of HPLC.
35. Explain the various types of centrifuges and their importance.
36. Discuss the construction, operation and applications of UV visible spectrophotometer.
37. Explain the principle, methodology and applications of gel electrophoresis.
