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

SUBJECT CODE: 15BT/AE/BI45

B.Sc. DEGREE EXAMINATION, APRIL 2018
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. Which of the following rotors is used for minimising the wall effects during centrifugation?
   a. Vertical tube rotorsb. Swinging bucket rotors c. Zonal rotors d. Elutor rotors
2. A spectrophotometer is a more refined instrument because of
   a. High sensitivity b. Measure coloured solution c. Double beam d. Deuterium lamp
3. Concentration of any unknown substance can be measured using
   a. Colorimeter b. Centrifuge c. Chromatography d. Both a & b
4. The volume of mobile phase is known as
   a. Bed volume b. Elution volume c. Effluent volume d. Void volume
5. DNA bands can be detected using
   a. Caesium chloride b. Ethidium bromide c. Coomassie blue d. Aniline blue

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

6. Density gradient centrifugation mainly depends on _____ of the particles.
7. Single wavelength light is produced by _____.
8. In GLC, the mobile phase is _____.
9. _____ is a device that converts light into chemical energy.
10. _____ is used for polymerisation in PAGE.

III. Statewhether true or false (1x4=4)

11. Sub-cellular fractionation is done by analytical centrifugation.
12. Microcuvettes are used for the measurement of expensive chemicals.
13. The samples can be reused in colorimeter.
14. In paper chromatography, gravitational force is the propelling force.

..2

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

15. Centrifuge	-	nm
16. Colorimeter	-	KDa
17. Chromatography	-	rpm
18. Electrophoresis	-	rf

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

19. Microfuge
20. Svedberg unit
21. Standard curve
22. Colorimeter
23. Cuvette
24. Rf
25. Ligand
26. Agarose
27. Isoelectric focussing

SECTION-B

ANSWER ANY FOUR OF THE FOLLOWING QUESTIONSIN ABOUT 200 WORDS EACH. DRAW DIAGRAMS WHEREVER NECESSARY. **(4x6=24)**

28. Explain the principle of ion exchange chromatography.
29. Explain Beer-Lamberts law.
30. What is density gradient centrifugation?
31. Give an account on the types of matrices used in column chromatography.
32. Write an account on capillary electrophoresis.
33. Howare pigments separated using thin layer chromatography?

SECTION-C

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

34. Explain the principles of centrifugation with respect to an ultracentrifuge.
35. With suitable illustrations describe the construction and applications of a spectrophotometer.
36. Describe the principle, components and working methodology of HPLC.
37. Give a detailed account on PAGE and add a note on its applications.

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