

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 2019
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. High speed centrifuges are generally with
a. 5000 rpm b. 13000rpm c. 25000 rpm d. 70000 rpm
2. In a colorimeter specific bandwidth of incident light can be selected using
a. quartz prism b. grating c. silica prism d. glass filter
3. A xenon arc lamp is used as a source of illumination in
a. colorimeter b. fluorimeter c. spectrophotometer d. uv spectrophotometer
4. Positively charged DEAE-Sephadex columns are used for the separating proteins that are
a. positively charged b. negatively charged c. insoluble d. large molecules
5. DNA fragments in a matrix under electric field separate according to
a. size b. Charge c. Size and charge d. affinity

II. Fill in the blanks:

(1x5=5)

6. Cesium chloride is used in _____ centrifugation.
7. A Colorimeter uses a _____ lamp as a source of radiation.
8. In UV spectrophotometer cuvettes are made of _____.
9. In gas chromatography the carrier gas has to be chemically _____.
10. Agarose gel Electrophoresis is used to separate_____.

III. State True or False

(1x4=4)

11. In centrifugation, sedimentation of particles is dependent only on its size.
12. Absorbance of a material is not proportional to its concentration.
13. Double beam spectrophotometer enables measuring absorbances of the sample and blank simultaneously.
14. Ethidium bromide is a fluorescent dye used for identification of nucleic acids.

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

- | | | |
|-----------------------|---|-------------------|
| 15. Detector | - | Sedimentation |
| 16. Column | - | SDS |
| 17. Centrifugal force | - | electrical energy |
| 18. Electrophoresis | - | High Pressure |

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

19. Gradient media
20. Detector
21. Monochromator
22. Packed bed column
23. Polyacrylamide
24. Retention factor
25. Differential centrifuge
26. Carrier gas
27. Casting of gel (horizontal)

SECTION-B

**ANSWER ANY FOUR OF THE FOLLOWING QUESTIONS IN ABOUT 200 WORDS EACH.
DRAW DIAGRAMS WHEREVER NECESSARY.**

(4x6=24)

28. Describe the different types of rotors.
29. What is the principle involved in a Colorimeter?
30. Explain the working of a spectrophotometer with block diagrams.
31. Why is affinity chromatography a useful method for purification of certain components – Explain?
32. Write in detail the principles of immuno electrophoresis.
33. Explain the principle in thin layer chromatography.

SECTION-C

**ANSWER ANY TWO OF THE FOLLOWING QUESTIONS IN ABOUT 1000 WORDS EACH.
DRAW DIAGRAMS WHEREVER NECESSARY.**

(2x20=40)

34. Describe in detail the different types of centrifuge.
35. With schematic diagrams, explain the working of a double beam spectrophotometer.
36. How does an agarose gel electrophoresis work?
37. With schematic diagrams, explain the working of a HPLC.
