

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI – 600 086  
(For Candidates admitted during the academic year 2005-06 & thereafter)

SUBJECT CODE: BT/MO/IS34  
ZL/MO/IS34

B.Sc. DEGREE EXAMINATION NOVEMBER 2007  
BRANCH V(a) – PLANT BIOLOGY AND PLANT BIOTECHNOLOGY  
BRANCH VI(a) -ADVANCED ZOOLOGY AND BIOTECHNOLOGY  
THIRD SEMESTER

COURSE : MAJOR OPTIONAL  
PAPER : INSTRUMENTATION  
TIME : 3 HOURS

MAX. MARKS : 100

SECTION – A

ANSWER ALL QUESTIONS.

I. WRITE SHORT NOTES ON ANY FIVE ( 5 x 3 = 15 )

1. Counter efficiency
2. Rf value
3. Marker dye
4. Rotar
5. Micro autoradiography
6. Electro endosmosis
7. Transmittance
8.  $\gamma$  rays

II. STATE TRUE OR FALSE ( 5 MARKS )

9. Fluorescence may take longer wavelength than phosphorescence
10. Svedberg unit is the sedimentation value of a particle.
11. The greatest disadvantage in scintillation counter is quenching.
12. The complimentary colour for Red is yellow.
13. Cooling centrifuge is used to avoid denaturing of proteins

III. CHOOSE THE CORRECT ANSWER ( 5 MARKS )

14. The absorption spectra for nucleic acids is \_\_\_\_\_  
a) 280nm      b) 260nm      c) 320nm      d) 360nm
15. \_\_\_\_\_ are radiation of single wave length  
a) dichromators      b) multichromators      c) monochromators  
d) transmittors
16. A neutron is converted to a proton by ejecting a \_\_\_\_\_  
a)  $\alpha$  particle      b) Negatron      c)  $\gamma$  particle      d) position
17. The column used in HPLC is generally made of \_\_\_\_\_  
a) Resin      b) Stainless steel      c) Silver iodide      d) Paper.
18. Marker dye used for identifying proteins in PAGE is  
a) Robin blue      b) Bromo phenol blue  
c) methyl green      d) Sudan black

**IV. MATCH THE FOLLOWING ( 5 MARKS )**

- |                          |   |                                |
|--------------------------|---|--------------------------------|
| 19. Celite               | - | Catalyst for formation of gel. |
| 20. Sodium               | - | Gas liquid chromatography      |
| 21. Centrifugal field    | - | Flame photometry               |
| 22. C <sup>14</sup>      | - | RCF                            |
| 23. Ammonium persulphate | - | Radio tracers                  |

**SECTION -B**

**ANSWER ANY FIVE OF THE FOLLOWING. EACH ANSWER NOT EXCEEDING 300 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. ( 5 x 6 = 30)**

24. Distinguish paper chromatography from Gas liquid chromatography.
25. What are the applications of Radio activity?
26. Explain moving boundary electrophoresis. How does it vary from zone electrophoresis?
27. Explain the principle and types of centrifugation you have studied.
28. Explain the working of Scintillation counter.
29. What is Beer-Lambert's law? How is phosphorous estimated using a calorimeter?
30. Write notes on the characteristics of  $\alpha$  and  $\beta$  rays.

**SECTION -C**

**ANSWER ANY TWO OF THE FOLLOWING. EACH ANSWER NOT EXCEEDING 1200 WORDS. DRAW DIAGRAMS WHEREVER NECESSARY. ( 2 x 20 = 40)**

31. Explain the working of double beam spectrophotometer. How are Ascorbic acid and Carbohydrates estimated using spectroscopy?
32. Write about the principle technique and application of HPLC.
33. How are proteins separated using PAGE?
34. Write about the principle and instrumentation of Flame photometer. How are calcium and potassium estimated using it?

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