

TM243721B

Reg. No :

Name :

MASTER'S DEGREE (C.S.S) EXAMINATION, NOVEMBER 2024

2023 ADMISSIONS REGULAR

SEMESTER III - CORE COURSE ZOOLOGY

ZO3C11TM20 - Biophysics, Instrumentation and Biological Techniques

Time : 3 Hours

Maximum Weight : 30

Part A

I. Answer any Eight questions. Each question carries 1 weight

(8x1=8)

1. Compose a brief account on photoelectric effect.
2. Formulate notes on Fick's law of diffusion and diffusion coefficient.
3. State and describe the laws of thermodynamics.
4. Comment on shadow casting.
5. Describe the major characteristics of atomic force microscope.
6. Write the principle of electrophoresis.
7. Write a short note on partition coefficient.
8. Compare between zone electrophoresis and moving boundary electrophoresis.
9. Explain the basic principle of FTIR.
10. Define nanotechnology and nanoparticles.

Part B

II. Answer any Six questions. Each question carries 2 weight

(6x2=12)

11. Exemplify the biological effects of radiation.
12. Highlight the significance of osmosis in plants and animals.
13. Summarize the histochemistry of protein.
14. Give a detailed account on preparation of temporary slide.
15. Comment on 2D gel electrophoresis.
16. Differentiate between SDS and non-SDS gel electrophoresis.
17. Explain the instrumentation and working of electron spin resonance spectroscopy. Mention its applications
18. Compare the working of solid and liquid scintillation counters used for radioisotope detection.

Part C

III. Answer any Two questions. Each question carries 5 weight

(2x5=10)

19. Describe in detail light and dark reactions of photosynthesis.
20. Discuss briefly on the histochemistry of carbohydrate.
21. Write an essay on various electrophoretic methods. Discuss its applications.
22. Compare the instrumentation of NMR and mass spectroscopy. Mention its applications in the field of biology.