22/10/25

TM253983U

Reg. No :.....

Name :.....

MASTER'S DEGREE (C.S.S) EXAMINATION,OCTOBER 2025

2024 ADMISSIONS REGULAR

SEMESTER III - CORE COURSE

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. Implicate the applications of radioactive tracers.
2. Define the term diffusion. Indicate the key factors affecting it.
3. Distinguish between redox couple and redox potential.
4. What do you mean by negative staining?
5. Describe the major characteristics of atomic force microscope.
6. Write the principle of electrophoresis.
7. Write the principle of centrifugation.
8. Explain the basic principle of FTIR.
9. Explain the basic principle of Raman spectroscopy.
10. Define nanotechnology and nanoparticles.

Part B

II. Answer any Six questions. Each question carries 2 weight **(6x2=12)**

11. Elaborate chemiosmotic theory.
12. Enumerate the significance of diffusion in plants and animals.
13. What do you mean by whole mount? Comment on the protocol used for making a whole mount.
14. Give a detailed account on preparation of temporary slide.
15. Comment on agarose gel electrophoresis.
16. Differentiate between preparative and analytical centrifuges.
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. Justify that photosynthesis is a two – stage process consisting of light – dependent photochemical and carbon – fixation reactions.
20. Write an elaborate account on electron microscope.
21. Write an essay on centrifugation. Mention the basic principle of separation, different types and applications.
22. Elaboarte the basic principle of colorimetry and spectrophotometry. Mention the applications.