

First Semester Zoology M.Sc. Degree Examination, June 2021
ZO213Biophysics, Instrumentation and Nanoscience and Nanotechnology

Time 3 hrs.

Max Marks 75

I. Answer any ten of the following each in a paragraph. Each Question carries 2 marks (10x 2=20 marks)

1. What is Ionization radiation?
2. Give the uses of Electrophoresis
3. Mention the scope of Nuclear Medicine
4. What are nano wires and nanotubes ?
5. What are Luminescent Quantum Dots?
6. What is FMRI?
7. What is principle behind AAS?
8. Explain Single neuron recording and Patch clamping
9. Comment on PET
10. What is meant by Free Energy?
11. What is High Throughput Screening?
12. What are the advantages of Radio waves?
13. What are the prospects of Artificial Intelligence?
14. What is treadmill Test?
15. Write a brief note on laminar flow systems

II. Answer any six of the following each not exceeding a page Each Question carries 4 marks (6x 4=24 marks)

16. What are radioisotopes? Comment on their uses
17. Elaborate on different Electrophoresis methods
18. Briefly describe about Ultracentrifugation and its application
19. Comment on Real time PCR and DNA sequences
20. Briefly the principle and applications of surface plasmon resonance
21. Write a note on the density gradient centrifugation
22. Briefly explain the ultrasound scanning and eco cardiogram
23. Discuss the laws of thermodynamics
24. Prepare a short note on the application of X-rays in biological studies
25. Write notes on Analysis of biomolecular structure by atomic force microscopy

III. Write short essay not exceeding two pages on any three of the following. Each question carries seven marks. (3x7=21 Marks)

26. Explain the applications of nanotechnology in food and agriculture industry
27. Discuss the role of nano sensors in disease diagnosis in medical fields
28. Discuss the principle and working of high speed and ultra-centrifuges. Mention their applications
29. Write a short essay on principles of NMR and EMR spectroscopy and their application in biological science
30. Elaborate on Detection & measurement of radiation

IV. Answer any one of the following not exceeding four pages. The question carries ten marks. (1x10=10 Marks)

31. What is nanotechnology? Discuss the applications of nanotechnology in ensuring environmental safety
32. Explain X-ray diffraction, write an account on molecular structure determination using X-ray diffraction