

Reg. No .....

Name .....

**M. Sc DEGREE END SEMESTER EXAMINATION - OCTOBER 2019****SEMESTER 1 : ZOOLOGY****COURSE : 16P1ZOOT03 : BIOPHYSICS, INSTRUMENTATION AND BIOLOGICAL TECHNIQUES***(For Regular - 2019 Admission and Supplementary - 2016/2017/2018 Admissions)*

Time : Three Hours

Max. Marks: 75

**Section A****Answer any 8 (2 marks each)**

1. What do you mean by 'Donnan potential'? Comment on Gibbs-Donnan equilibrium.
2. Illustrate the various types of Endocytosis.
3. Comment on the reservations of Chemiosmotic hypothesis.
4. Mention the effects of radiation on cell division.
5. Outline the principle of a Scanning Electron microscope.
6. Distinguish between Descending and Ascending paper chromatography.
7. What are the applications of PAGE?
8. What are the integral parts of a spectrophotometer?
9. What is the use of a Geiger-Muller counter?
10. Comment on nanomedicine.
11. Comment on the principle involved in RIA.
12. Distinguish between digital and analog pH meters.

(2 x 8 = 16)

**Section B****Answer any 7 (5 marks each)**

13. Explain the structure and functions of  $\text{Na}^+ \text{K}^+$  pump.
14. Outline the unique features of Photoelectric effect.
15. Discuss the working of an Atomic force microscope.
16. Outline the features of Ion Exchange chromatography.
17. Discuss the various buffers and supporting media used in Electrophoresis. What are the unique features of each of it?
18. Describe the principle and technology involved in atomic absorption spectroscopy (AAS).
19. Comment on the applications of 'Ultracentrifuge' in biomolecular study?
20. Explain the principle and methodology involved in Autoradiography. Add a note on its uses.
21. Briefly describe the different types of ELISA.
22. Describe the procedures involved in the preparation of a counter stained permanent mount.

(5 x 7 = 35)

**Section C****Answer any 2 (12 marks each)**

23. Explain the Laws of thermodynamics.
24. Discuss the principle, working and applications of a Differential Interference Contrast microscope.
25. Give a detailed account of HPLC. In what way it is different from GC?
26. Describe the basic principle involved in NMR spectral analysis and mention the features that can be analyzed using NMR spectroscopy.

(12 x 2 = 24)