

Mid-West University
Examinations Management Office

End Semester Examination 2081

Bachelor level/ B. Sc. /5th Semester

Full Marks: 60

Time: 3 hours

Pass Marks: 30

Subject: Biophysics (ELC455)

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.

Group-A

Attempt all long answer questions. **[4x6 = 24]**

1. Define Biomolecules. Explain the types and properties of biomolecules.
2. Derive the diffusion equation in one dimension and the Brownian equation of motion.
3. What is meant by nerve impulse? Describe the Action potentials and Ion channels are related to nerve impulses.
4. Define protein-ligand. What is the computational methods for protein-ligand binding site prediction?

OR

What is radiation? What are the health effects of radiation exposure?

Group-B

Attempt any six short answer questions. **[6x4 = 24]**

5. X-ray diffraction (XRD) is an analytical technique based on the diffraction of X-rays by matter, especially for crystalline materials. How can you explain this statement?
6. Describe the Origin and Evolution of Life.
7. What are the interactions of radiations? Describe the radiation quantity and their measurement units.
8. Describe the ionic currents through electrolytes, Electron conduction, and tunneling.
9. Discuss the types and general molecular structure of an Amino acid.
10. What is radioactivity? Explain how the Ionizing and Non-ionizing radiation, Interaction of Ionizing radiation affects living beings.

OR

Describe the manipulation of biomolecules using optical tweezers, and tomography.

11. What is Molecular Docking? Explain the Computational study of drug molecules, the Computational Design of Drugs, and their Functional Properties.

Group-C

Attempt any six very short answer questions. **[6x2 = 12]**

12. What is the difference between Prokaryotic and Eukaryotic cells?
13. List out the unique features of Animal and Plant Cells.
14. What are the components of the plasma membrane?
15. Why is Faraday's law important?
16. What are dosimetry and dosimeters? Describe its types.
17. What is meant by the scattering of light? Explain Rayleigh Scattering.
18. What are the differences between the Neutron and X-ray scattering of crystal diffraction?

The End