

**Postgraduate Spring 2023  
TOS NUMS Entry Test  
PhD Molecular Medicine**

| <b>S. No</b> | <b>TOPIC</b>   |
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| 1.           | <b>Cell Biology:</b> <ul style="list-style-type: none"> <li>• Chemical structure and biological functions of lipids, proteins, carbohydrates and nucleic acids</li> </ul>  |
| 2.           | <b>Enzymology</b> <ul style="list-style-type: none"> <li>• Properties of enzymes</li> <li>• Factors affecting activity of Enzymes</li> <li>• Enzymes in diagnostics</li> </ul>   |
| 3.           | <b>Basic Molecular Biology of Eukaryotes</b> <ul style="list-style-type: none"> <li>• DNA replication</li> <li>• Transcription of RNA</li> <li>• Protein synthesis</li> </ul>  |
| 4.           | <b>Clinical Biochemistry</b> <ul style="list-style-type: none"> <li>• Diabetes mellitus</li> <li>• Dyslipidemia</li> <li>• Glycogen storage diseases</li> <li>• Lysosomal storage diseases</li> <li>• Jaundice</li> <li>• Disorders of lipid metabolism</li> </ul>   |
| 5.           | <b>DNA damage and repair in Eukaryotes</b>   |
| 6.           | <b>Molecular Genetic</b> <ul style="list-style-type: none"> <li>• Types of genetic mutations with their effect on DNA sequence</li> </ul> <b>Genetic disorders:</b> <ul style="list-style-type: none"> <li>• Hemoglobinopathies</li> <li>• Porphyrias</li> <li>• Inborn errors of protein metabolism</li> <li>• Cystic Fibrosis</li> <li>• SCIO</li> </ul> |
| 7.           | <b>Molecular Techniques</b> <ul style="list-style-type: none"> <li>• Polymerase chain reaction (PCR) with examples of its use in clinical practice</li> <li>• DNA/RNA extraction</li> <li>• Restriction endonucleases, Probes</li> <li>• Gel electrophoresis</li> </ul>  |
| 8.           | <ul style="list-style-type: none"> <li>• Research Methodology</li> <li>• Biostatistics/Analytical</li> <li>• Medical Writing/ Bioethics</li> </ul>   |