

**Syllabus for Mains Exam (Descriptive type): Biochemist**

Syllabus	Reference books
<p><b>Section I: Introduction to Biochemistry (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Overview of Biochemistry</li> <li>- Biomolecules and their classification</li> <li>- Chemical structure and properties of biomolecules</li> </ul>	<p>Voet D., Voet J.G, Biochemistry 4th Edition., John Wiley and Sons, 2011.</p> <p>Nelson, D. C. andCox, M.M., Lehninger Principles of Biochemistry, 5thEdition,W. H. Freeman, 2010.</p>
<p><b>Section II: Enzymes and Enzyme Kinetics (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Enzyme nomenclature and classification</li> <li>- Enzyme mechanisms and kinetics</li> <li>- Enzyme regulation and inhibition</li> </ul>	<p>Berg J.M., Tymoczko J.L. and Stryer L., Biochemistry. 7th edition, W.H. Freeman and Co. New York, 2011. G.M. Cooper. 2013.</p> <p>The Cell - A Molecular Approach, Sunderland (MA), Sinauer Associates, Inc. USA.</p>
<p><b>Section III: Metabolism (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Carbohydrate metabolism</li> <li>- Lipid metabolism</li> <li>- Amino acid metabolism</li> <li>- Integration of metabolic pathways</li> </ul>	<p>Gerald K., Cell and Molecular Biology, Concept and Experiment, 5th Edition, Wiley, 2007.</p>
<p><b>Section IV: Molecular Biology (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- DNA structure and replication</li> <li>- RNA structure and transcription</li> <li>- Protein synthesis and translation</li> <li>- Genetic code and regulation of gene expression</li> </ul>	<p>Lodish, H., Berk A., Kaiser C. A., Krieger M., Bretscher A., Ploegh H., and Scott M.P. Molecular Cell Biology, 7th Edition, Freeman, W. H. and Co., 2013.</p>
<p><b>Section V: Cell Signalling (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Cell signalling pathways</li> <li>- Hormones and their action</li> <li>- Signal transduction mechanisms</li> </ul>	<p>Alberts B., Walter P., Johnson A., Lewis J., Morgan D., and Raff. M., RobertsK., Walter P. Molecular Biology of the Cell, 6th Edition, Garland Publishing Inc., 2014.</p>
<p><b>Section VI: Biochemical Techniques (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Spectroscopy and chromatography</li> <li>- Electrophoresis and PCR</li> <li>- DNA sequencing and molecular biology techniques</li> </ul>	<p>Michael J Pelczar, Microbiology, Tata McGraw, India.</p> <p>Microbiology by Stuart Walker, W B Saunders Principles of Virology: Molecular Biology, Pathogenesis, and Control of Animal Viruses.</p>
<p><b>Section VII: Clinical Biochemistry (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Principles of clinical laboratory testing</li> <li>- Biochemical markers in disease diagnosis</li> <li>- Diagnostic techniques and instrumentation</li> </ul>	<p>S. J. Flint, V. R. Racaniello, L. W. Enquist, V. R. Rancaniello, A. M. Skalka. A text book of Medical Physiology by Guyton. A.C., H. Sanders Philadelphia.</p> <p>Introduction to Physiology by Davidson H and Segal M. B. Academic Press.</p>
<p><b>Section VIII: Special Topics in Biochemistry (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Biochemical aspects of nutrition</li> </ul>	<p>Review of Medical Physiology-William F.Ganong</p>

<ul style="list-style-type: none"> <li>- Biochemistry of cancer</li> <li>- Biochemistry of aging</li> <li>- Biochemistry of neurodegenerative diseases</li> </ul>	<p>Physiological basis of Medical Practice, John.B.West.</p>
<p><b>Section IX: Research Methodology (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Experimental design and data analysis</li> <li>- Ethical considerations in research</li> <li>- Literature review and scientific writing</li> </ul>	<p>Vander's Human Physiology-The mechanism of Body function, Widmaier, Raff, strang.</p> <p>Irwin W. Sherman, Malaria Parasite Biology, Pathogenesis, and Protection, American Society for Microbiology. 1998. WHO technical series-949; Control of the leishmaniasis (ISBN 978 92 4 120949 6)</p>
<p><b>Section X: Case Studies and Clinical Correlations (10 Marks)</b></p> <ul style="list-style-type: none"> <li>- Application of biochemistry in clinical scenarios</li> </ul>	<p>Virology: Principles and Applications John Carter, Venetia Saunders. Harpers Illustrated Biochemistry 30th Edition, McGraw-Hill Education, 2015</p> <p>Clinical Biochemistry and Metabolic Medicine Eighth Edition by Martin Andrew Crook, CRC Press, 2012</p> <p>Textbook of Biochemistry for Medical Students, 7th edition, by D M Vasudevan, Sreekumari S, KannanVaidyanathan, 2010, Jaypee.</p> <p>Clinical chemistry: Techniques, Principles, Correlations , 6th Edition, by Bishop, Fody and Schoeff, 2012,</p> <p>Lippincott Williams &amp; Wilkins John W. Creswell, Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 4th Edition SAGE</p> <p>Sharan B. Merriam &amp; Elizabeth J. Tisdell, Qualitative Research: A Guide to Design and Implementation, 4th Edition, John Wiley &amp; Sons</p>

**Note:** The reference books are indicative and for guidance purpose only. Candidates are informed to refer specific books for concerned topics prescribed by regulatory authorities.