

BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE, INDIA
PhD Entrance Test – 2025
SECTION-II: Medical Biochemistry - 35 Marks

- 1) Cell structure & biochemical functions
- 2) Chemistry of Enzymes
- 3) Bioenergetics & biological oxidation
- 4) Principle, working & applications of, a) Colorimetry b) Spectrophotometry c) Flame photometry d) Fluorometry e) Atomic absorption spectroscopy g) ultra centrifugation
- 5) Principle, types & applications of, a) Electrophoresis b) chromatography
- 6) Auto analyzers, Blood gas analyzers
- 7) Automation in clinical chemistry
- 8) Basics of Mass spectroscopy, Nuclear Magnetic Resonance, chemiluminescence and Electron - microscopy
- 9) Metabolism of Carbohydrates, Lipids, Proteins, and Amino acids, Nucleic acids, Hemoglobin.
- 10) Vitamins- chemistry, biological importance, deficiency manifestations & Recommended daily allowance.
- 11) Diet in management of various chronic diseases viz, Diabetes mellitus, Coronary artery disease, Renal disorders, etc.
- 12) Composition, chemistry & functions of specialized tissues like muscle, bone, nerve, connective tissue, & brain adipose tissue.
- 13) Acid base balance & imbalance
- 14) Water & electrolytes balance & imbalance
- 15) Hormones-: Communication among cells & tissues. Hormone- General mechanism of action of hormones, chemistry, functions, synthesis of steroid hormones, polypeptide hormones, & thyroid hormones. Chemistry & functions of hormones of pancreas, and parathyroid. Local hormones. Clinical disorders of hormones, Hormone receptors.
- 16) Biochemistry of Diabetes mellitus, Atherosclerosis, Fatty liver, obesity, cancer and AIDS.
- 17) Biochemical changes in pregnancy & lactation.
- 18) Total Quality Management of Laboratories.
- 19) Inborn errors of metabolism.
- 20) Central dogma, genetic code, protein biosynthesis & its regulation.
- 21) DNA: structure, functions, replications, Mutation & repair of DNA,
- 22) Gene expression & gene amplification & gene regulation, Oncogenes
- 23) Genetic engineering and PCR
- 24) Lipid peroxidation, free radicals & antioxidants, Nitric oxide formation & its metabolism & its role in Medicine.