

Syllabus of the Integrated Ph.D. Biology written test

1. General Biology

Viruses, pro and eukaryotic organisms

Cell organelles and their functions

Physiology, metabolism and cellular organisation

2. Basics of Biochemistry, Biophysics, Molecular Biology

Buffers

Trace elements in biological systems

Enzymes and proteins

Vitamins

Biological oxidations

Synthesis of nucleic acids and proteins

Carbohydrate, lipid and nucleic acid metabolism

Digestion and absorption

Neuromuscular systems

Structure of bio molecules and biomolecular interactions

Thermodynamics and kinetics of biological systems

Biochemical and Biophysical methods in structural biology and biochemistry

DNA repair, replication and recombination

3. Genetics

Mendelian genetics and heredity

Chromosome structure and function

Nature of gene and its functions

Biochemical genetics

Genomics

4. Organismal Biology

Animal behavior

Biology of populations and communities

Ecology

Evolution

Diversity of organisms

Evolutionary and population genetics

Conservation biology

5. Microbiology and Cell Biology

Classes of micro organisms and their characterization

Pathogenic micro organisms and diseases

Microbial genetics and development

The test will also include topics in basic Chemistry, Mathematics and Physics at Plus 2 Level.