

## Graduate Aptitude Test – Biotechnology (GAT-B) 2021 - Syllabus

The question paper will have two parts:

**Part A / Section A:** Part A / Section A will have 60 compulsory multiple choice questions of the level of 10+2 in the subjects: Physics, Chemistry, Mathematics and Biology. Each correct answer is of One (1) mark. There will be negative marking and for each wrong answer, Half (1/2 or 0.5) mark will be deducted.

**Part B / Section B:** Part B / Section B will have multiple choice questions of Bachelor's (Graduate) level requiring thinking and analysis. There will be questions from Basic Biology, Life Sciences, Biotechnology and allied areas as per syllabus given here. There will be 100 questions out of which candidates will have to attempt 60 questions. Each correct answer is of Three (3) marks. There will be negative marking and for each wrong answer, One (1) mark will be deducted.

Un-answered/un-attempted question will be given Zero (0) mark.

To answer a question, candidate needs to choose one option as correct option.

GRADUATE APTITUDE TEST-BIOTECHNOLOGY (GAT-B) 2021			
Parts / Sections	Number of Questions	Number of Questions to be attempted	Marks
Part A / Section A (Multiple choice questions of the level of 10+2 in the subjects: Physics, Chemistry, Mathematics and Biology).	60	60	1*60 = 60
Part B / Section B (Multiple choice questions of Graduate / Bachelor's level in the subjects: Basic Biology, Life Sciences, Biotechnology and allied areas as per syllabus given).	100	60	3*60 = 180
<b>Total</b>	<b>160</b>	<b>120</b>	<b>240</b>

**Syllabus for Part A / Section A is of the level of 10+2 in the subjects of Physics, Chemistry, Mathematics and Biology.**

**Syllabus for Part B / Section B is given below:**

Biomolecules-structure and functions; Biological membranes, structure, action potential and transport processes; Enzymes- classification, kinetics and mechanism of action; Basic concepts and designs of metabolism (carbohydrates, lipids, amino acids and nucleic acids) photosynthesis, respiration and electron transport chain; Bioenergetics.

Viruses- structure and classification; Microbial classification and diversity (bacterial, algal and fungal); Methods in microbiology; Microbial growth and nutrition; Aerobic and anaerobic respiration; Nitrogen fixation; Microbial diseases and host-pathogen interaction.

Prokaryotic and eukaryotic cell structure; Cell cycle and cell growth control; Cell-Cell communication, Cell signaling and signal transduction.

Molecular structure of genes and chromosomes; Mutations and mutagenesis; Nucleic acid replication, transcription, translation and their regulatory mechanisms in prokaryotes and eukaryotes; Mendelian inheritance; Gene interaction; Complementation; Linkage, genetics (plasmids, transformation, transduction, conjugation); Horizontal gene transfer and Transposable elements; RNA interference; DNA damage and repair; Chromosomal variation; Molecular basis of genetic diseases.

Principles of microscopy-light, electron, fluorescent and confocal; Centrifugation- high speed and ultra; Principles of spectroscopy-UV, visible, CD, IR, FTIR, Raman, MS, NMR; Principles of chromatography- ion exchange, gel filtration, hydrophobic interaction, affinity, GC, HPLC, FPLC; Electrophoresis; Microarray.

History of Immunology; Innate, humoral and cell mediated immunity; Antigen; Antibody structure and function; Molecular basis of antibody diversity; Synthesis of antibody and secretion; Antigen-antibody reaction;

