



MEER SIR ACADEMY

MSc Biochemistry Comparative Entrance Syllabus

JMI AMU CUET PG

Academic Session 2027-28

JMI status	No clearly listed standalone MSc Biochemistry programme was located in the current JMI programme and entrance-syllabus listings
AMU route	University admission test with a dedicated Biochemistry syllabus
CUET PG route	Biochemistry subject paper SCQP05
Best strategy	Prepare the shared biochemistry core first and then add AMU or CUET specific topics

This comparison is designed for entrance preparation. The JMI column is treated cautiously because the university currently lists Biosciences and Biotechnology departments, but a separate MSc Biochemistry entrance programme was not clearly identified in the official 2026 27 listings.

Comparison at a Glance

Feature	JMI	AMU	CUET PG
Exact programme	Not clearly listed	MSc Biochemistry	Biochemistry paper used by participating universities
Admission route	Check current JMI prospectus for the relevant life science programme	AMU admission test	CUET PG SCQP05
Paper focus	Programme specific if introduced or notified	Broad undergraduate biochemistry and allied life sciences	75 compulsory subject specific questions



Question language	As notified by JMI	As notified by AMU	Bilingual English and Hindi
Strongest emphasis	Biosciences and biotechnology fundamentals for related programmes	Detailed biochemistry cell biology microbiology clinical and molecular coverage	Standardized core biochemistry plus nutrition physiology microbiology immunology and techniques

Common Core for All Preparations

- Biomolecules including proteins carbohydrates lipids nucleic acids and water chemistry
- Cell biology including organelles membranes cytoskeleton cell cycle apoptosis and cancer
- Enzymology including classification kinetics inhibition regulation and applications
- Metabolism and bioenergetics including glycolysis TCA cycle electron transport oxidative phosphorylation and nitrogen metabolism
- Molecular biology including replication transcription translation gene regulation and DNA repair
- Biochemical techniques including chromatography centrifugation electrophoresis spectrophotometry ELISA and PCR
- Microbiology and immunology
- Human physiology clinical biochemistry and disease markers
- Genetics genomics proteomics and biotechnology basics

JMI Position and Relevant Preparation

The official JMI academic listings identify Departments of Biosciences and Biotechnology. However, a standalone MSc Biochemistry programme and a separate 2026 27 entrance syllabus were not clearly visible in the current official programme listings. Students should therefore verify the exact programme title before applying.

Relevant Life Science Preparation Areas

- Biochemistry of biomolecules and metabolism
- Cell and molecular biology
- Microbiology and immunology
- Genetics and biotechnology
- Plant and animal physiology
- Ecology evolution and basic biosciences
- Laboratory methods and research aptitude where specified

Important: Do not assume that CUET PG Biochemistry SCQP05 automatically applies to JMI unless the current JMI prospectus or programme notice specifically says so.



AMU MSc Biochemistry Syllabus

AMU publishes a dedicated and extensive MSc Biochemistry syllabus through the Faculty of Life Sciences. For entrance preparation, candidates should revise the following undergraduate foundations and their applications.

Biomolecules and Fundamentals of Biochemistry

- Water pH buffers and Henderson Hasselbalch equation
- Amino acids peptides protein structure and function
- Carbohydrates including stereochemistry and polysaccharides
- Lipids fatty acids phospholipids cholesterol and membranes
- DNA RNA nucleotides nucleosides and the central dogma

Cell Biology

- Cell organelles and their functions
- Membrane structure transport and electrical properties
- Cytoskeleton microscopy and cell fractionation
- Mitosis meiosis cell cycle checkpoints apoptosis necrosis and cancer

Microbiology

- Classification identification growth and control of microorganisms
- Bacteria viruses fungi and microbial genetics
- Pathogens antibiotics resistance and applied microbiology

Enzymology and Metabolism

- Enzyme classification kinetics inhibition and regulation
- Carbohydrate lipid amino acid and nucleotide metabolism
- Bioenergetics electron transport and ATP synthesis

Nutrition and Clinical Biochemistry

- Nutrients energy requirements RDA probiotics and nutritional disorders
- Clinical laboratory principles quality control and specimen handling
- Liver renal cardiac and metabolic diseases and diagnostic markers

Immunology

- Innate adaptive cellular and humoral immunity
- Antigens antibodies immunoglobulin classes and immune cells
- Hypersensitivity vaccines monoclonal antibodies ELISA ELISPOT and FACS



Molecular Biology Genetics and Biotechnology

- DNA replication transcription translation and gene regulation
- Classical bacterial viral yeast and modern genetics
- PCR cloning expression vectors genomics proteomics and epigenetics
- Biosafety bioethics and genetic engineering

Biochemical and Research Skills

- Solution and buffer preparation
- Chromatography electrophoresis centrifugation and spectroscopic methods
- Experimental design statistics scientific writing and research methodology

CUET PG Biochemistry SCQP05

The official CUET PG Biochemistry paper contains 75 compulsory subject specific questions. The questions are bilingual in English and Hindi.

Introduction to Biochemistry

- Biochemistry as a discipline
- Elements and biomolecule formation
- Mole mole fraction and molarity
- Water adsorption viscosity distribution law osmotic pressure and photochemistry

Bioorganic Chemistry and Metabolites

- Organic reactions electrochemistry and chemical bonding
- Aliphatic aromatic compounds and IUPAC nomenclature
- Polymers and stereochemistry of biomolecules

Cell Biology

- Cell structure organelles cell fractionation cytoskeleton extracellular matrix
- Cell cycle cell division and cell death

Biochemical Techniques

- Chromatography centrifugation electrophoresis spectrophotometry and ELISA

Biomolecules and Nutrition

- Carbohydrates proteins lipids cholesterol DNA RNA glycoproteins and glycolipids
- Fermentation biodiesel and sequence basics
- Glycemic index balanced diet micronutrients nutraceuticals and special diets



Metabolism Bioenergetics and Membranes

- Lipids and biomembranes
- High energy compounds ETC aerobic and anaerobic ATP synthesis
- TCA cycle anaplerotic reactions redox balance and metabolic engineering
- Oxidative phosphorylation photophosphorylation and membrane transport

Human and Clinical Biochemistry

- Hormonal signal transduction respiration hemoglobin myoglobin muscle and nitrogen metabolism
- Blood urine liver kidney cancer triglycerides lipoproteins and diagnostic enzymes

Microbiology and Immunology

- Major contributors antibiotics resistance model microorganisms gut microbiome synthetic biology
- Immune organs cells receptors immunoglobulins hypersensitivity vaccines antigen antibody reactions tolerance and autoimmunity

Enzymology and Molecular Biology

- Enzyme catalysis activation energy and biological reactions
- DNA replication transcription repair translation lac operon and PCR
- Expression vectors transgenic crops genomics proteomics and metabolomics

Recommended Preparation Plan

- First revise biomolecules cell biology enzymes metabolism molecular biology and biochemical techniques.
- For AMU add deeper clinical biochemistry nutrition advanced enzymology genetics biosafety and research methodology.
- For CUET PG follow every SCQP05 heading and practise 75 question subject specific mock tests.
- For JMI verify the exact programme name and admission route before selecting a paper or buying an application form.
- Use standard undergraduate texts such as Lehninger Principles of Biochemistry Stryer Biochemistry Alberts Molecular Biology of the Cell and Kuby Immunology.

Official Sources Consulted

- JMI Admission Portal and University Prospectus 2026 27 <https://admission.jmi.ac.in/>
- AMU Syllabus of Admission Tests and MSc Biochemistry syllabus <https://www.amucontrollerexams.com/>
- CUET PG Biochemistry SCQP05 syllabus <https://exams.nta.nic.in/cuet-pg/syllabus/science/>