

CHINTA PhD Exam syllabus for January 2025 intake (Biological Sciences)

The CHINTA exam will comprise of 45 multiple choice questions with no negative marking. The topics include basic questions on physics, chemistry and mathematics from NCERT CBSE 11th and 12th grade, especially from the topics that are relevant for neuroscience research. In addition, there are some advanced biology questions which will revolve more advanced molecular biology, genetics and physiology topics. The detail topics of each subjects are given below;

Physics (11th and 12th Grade, NCERT CBSE Syllabus):

- Mechanics: Laws of motion, gravitation, work, energy, and power.
- Waves and Optics: Wave motion, reflection, refraction, interference, and diffraction.
- Thermodynamics and Kinetic Theory.
- Electricity and Magnetism: Electrostatics, electric circuits, magnetic fields, and electromagnetism.
- Modern Physics: Atomic structure, nuclei, and semiconductor electronics.

Chemistry (11th and 12th Grade, NCERT CBSE Syllabus):

- Physical Chemistry: Atomic structure, thermodynamics, reaction kinetics.
- Organic Chemistry: Hydrocarbons, their structures and properties.
- Inorganic Chemistry: Periodic table, chemical bonding, p-block and d-block elements, coordination compounds.

Mathematics (11th and 12th Grade, NCERT CBSE Syllabus):

- Algebra: Matrix and determinants, quadratic equations, sequences and series.
- Calculus: Limits, derivatives, integrals, and applications.
- Trigonometry: Functions, identities, and equations.
- Geometry: Coordinate geometry, vectors, and 3D geometry.
- Probability and Statistics.
- Set theory

Biology (BSc Level):

- Biochemistry: Biomolecules (carbohydrates, proteins, lipids, nucleic acids), enzymes, metabolism (glycolysis, TCA cycle, oxidative phosphorylation).
- Genetics: Mendelian and non-Mendelian inheritance, DNA structure and replication, gene expression, mutations.
- Molecular Biology: Central Dogma, transcription, translation, gene regulation, recombinant DNA technology.
- Physiology: Cellular physiology, neurophysiology, cardiovascular, respiratory, and renal physiology.

We will upload the instructions for the online exam in a separate document shortly.