15. SPECIAL CENTRE FOR MOLECULAR MEDICINE

The pattern of JNUEE 2022-23 will be based on Multiple Choice Questions (MCQs) through Computer Based Test (CBT)

Ph.D.

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Syllabus for Entrance Examination
1	Special Centre for Molecular Medicine (SCMM)	Molecular Medicine- CMMH (905)	**Section A; General Aptitude/Research Methodology** **Section B; Different Subject Areas of Molecular Medicine** **Section A** **Aptitude / Research Methodology** **Basic Maths**; geometry, statistics, Arithmetics, Log, Basic knowledge of Computer science. **Chemistry:** Concept of Molarity, Normality, Related to Periodic Table, Organic Chemistry, Synthesis, Thermodynamics, Entropy, Enthalpy, Free energy, Law of Mass action, Reaction kinetics **Physics**; Newton's law, radioactivity, Electricity, capacitance, optics, sound, gravity, spectroscopy. **Basic Biology**; Zoology/Botany - classification/Evolution Biology/Population Biology, General Aptitude and reasoning. **Section B** **Biochemistry:** Metabolism, Nutrition, Biomolecules, Hormones, Enzymes, Omics. **Microbiology:** Bacterial genetics, Antibiotics mode of action, Infectious disease, **Industrial Biotechnology. Physiology, Diseases, Pharmacology, Genetics, Molecular Biology, Developmental Biology, Zoology, Population genetics. Botany**, **Molecular Biology**, **Advanced Chemistry**; Spectroscopy, Molarity/Normality, Radioactivity, Atomic Structure, Acid base, pH. **Medicinal Chemistry:** Drug-receptor interaction, DNA, Protein, Hormones as receptor, Pharmacokinetics, G-protein coupled receptor, Pharmacodynamics. **Cell biology: Organelles, Cell-Cell interaction, Cell signalling/ trafficking, Cell cycle. Drug resistance. Immunology** **Entrance test will contain questions on research methodology/experimental techniques in the relevant areas.**

16. CENTRE FOR THE STUDY OF LAW & GOVERNANCE

The pattern of JNUEE 2022-23 will be based on Multiple Choice Questions (MCQs) through Computer Based Test (CBT)

Ph.D.

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Syllabus for Entrance Examination
1	**Centre for the Study of Law & Governance (CSL&G)**	**Law & Governance – CLGH (907)**	The test will have a 50% weight for social science research methods and 50% weight for domain knowledge covering the disciplines of Economics, Political Science, Sociology, Public Administration, Anthropology, and Law. The questions will be at the level of an advanced Masters and all candidates will be required to attempt questions from all these disciplines. The broad coverage of the subject areas of these disciplines are as follows:" • **Political Science**: concept and theories of governance; theories of the State,

- democracy and development; decentralisation; global governance; politics of identity; multilevel governance; civil society and social capital; neoliberalism and globalisation; social justice; gender, development and governance; and, public administration.
- **Law**: Constitution and administrative law, criminal law, law and technology, environmental law, corporate laws and labour laws.
- **Economics**: Microeconomics, macroeconomics, development economics, political economy, basic of institutional economics and law and economics with particular focus on transactions costs and property rights, Economic Policy.
- **Sociology**: Sociological Theory, Kinship, Sociological Perspectives on Caste, Gender and Race; Sociology of Law; Culture and Society, Visual Culture. New Social Movements, Urban studies.

17. SPECIAL CENTRE FOR NANO SCIENCES

The pattern of JNUEE 2022-23 will be based on Multiple Choice Questions (MCQs) through Computer Based Test (CBT)

Ph.D.

Sl. No.	Name of Centre	Sub. Code & Sub. Code Number	Syllabus for Entrance Examination [Type of Questions for Entrance Examination: Multiple choice questions]
1	Special Centre for Nano Sciences	Nano Sciences – NNSH (908)	**NNSH (908) Nanoscience** **Part-A: Research Methodology (Common for all)** **1. General Science:** General appreciation and understanding of science including matters of everyday observation and experience. **2. Environmental awareness:** Pollution and its impacts, climate change, sustainable development. 3. Current events: Knowledge of significant national and international events. **4. General mental ability and reasoning:** Reasoning and analytical abilities. **5. Elementary Computer Science:** Basic computer awareness and its uses. **6. Interactive English:** Grammar, vocabulary, sentence completion, usage, synonyms, antonyms, one word substitute, idioms/phrases, error detection and comprehension. **7. Information and Communication Technology (ICT):** Terminology and abbreviations used in ICT, applications of ICT in academics and research. **8. Research aptitude:** Basic Concepts- 1. Meaning, nature, significance and types of research. 2. End to end process of research, Formulation of research problem, Design strategies in Research- Descriptive Studies, Analytic Studies, Experimental studies, Intervention trials etc., research proposal, Synopsis, Hypothesis, Data collection, Literature survey, Sampling, Interviewing, questionnaire, Data processing, Interpretation, Report writing, Bibliography, Data presentation and summarization, Graphical presentation of data, Research Ethics. 3. Thesis/ Dissertation writing. 4. Article, research paper, seminar, conference, symposium, workshop etc. 5. Role of governing bodies/research organizations like UGC, CSIR, ICAR, ICSSR, ICPR, ISRO, DRDO etc. in research and development. 6. Role and use of computers in research. **9. Basic concepts of Statistical methods for research** (Probability, Test of significance, Standard deviation, Measures of central tendency, Measures of variability, Measures of Relationship – Correlation, Hypothesis Testing – parametric and non-parametric tests;, Proportions, Relative risk, Odds ratio, Student t test, Anova, Error bars) **Part-B: Subject Specific** **In Part-B, candidate can choose any one of the Subject Streams: (Physical Sciences) or (Biological Sciences) or (Chemical Sciences) or (Engineering Sciences)for appearing in the Entrance Exam** **Physical Sciences** Interference. Diffraction. Polarization. Basic principles of quantum mechanics: Postulates; Wave-particle duality. Commutators and Heisenberg uncertainty principle. Schrödinger