

Notification

Syllabus of Entrance/Screening Test for the post of Curator (Botany)

Pattern of Examination

S.No.	Examination Type	Units	No. of Questions	Marks	Duration
1.	Multiple Choice Questions	Taxonomy, systematics and systems of classification	15	15	2 Hours
2.		Tools and techniques in taxonomy	30	30	
3.		Advanced techniques in taxonomy	20	20	
4.		Nomenclature, explorations and phytogeography	20	20	
5.		Angiosperm Phylogeny Group (IV) and its treatment	15	15	
		Total		100	

UNIT 1: Taxonomy, systematics and systems of classification.

15 Marks

- 1.1 Taxonomy – role, scope; Systematics- importance, evolution and phylogeny.
- 1.2 Taxonomic categories and characters: structure of taxonomic hierarchy; taxonomic categories (supra-specific, species, and infra-specific); taxonomic characters (kinds and criteria).
- 1.3 Systems of classification; artificial (Carl Linnaeus), natural (Bentham and Hooker) and phylogenetic systems (Takhtajan-Cronquist), phenetics (principles selection of characters, character-taxon matrix, similarity matrix).
- 1.4 Cladistics (Concept, terminology, taxon and character selection, cladogram construction and analysis).

UNIT 2: Tools and techniques in taxonomy.

30 Marks

- 2.1 Taxonomic tools: Basic techniques involved in preparation of herbarium specimens (collection, processing, mounting, repairing and accessioning); National herbaria of importance; World herbaria; Index Herbariorum; Index kewensis.
- 2.2 General concepts of specimen digitization; documentation, collection information system and standards; cataloguing and basic record keeping systems using computer databases; digital collection access management (Symbiota, Darwin Core, GBIF, iDigBio).
- 2.3 Ethical considerations involved in management and care of herbarium collections; collaborative and conservations approaches.
- 2.4 Plant identification field work, virtual herbarium, electronic sources, keys identification methods (literature, efloras, manuals, icons, journals, supporting literature).

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UNIT 3: Advanced techniques in taxonomy.

20 Marks

- 3.1 Introduction of Angiosperms Phylogeny Group (IV) Classification, Taxonomic evidences: anatomical, embryological, palynological, cytological and biochemical.
- 3.2 Phylogenetic analysis (Parsimony, Maximum Likelihood, Bayesian approaches, Neighbor-Joining).
- 3.3 Plant Molecular Systematics: DNA and amino acid sequence data, types of sequence data, sequence alignment; computer applications in systematics
- 3.4 Barcoding concept and DNA fingerprinting; Phylogenomic approach towards understanding plant systematics.

UNIT 4: Nomenclature, explorations and phylogeography.

20 Marks

- 4.1 Salient features of International Code of Botanical Nomenclature (Shenzhen Code). Principles of plant nomenclature, names of taxa, method, author citation, principles of priority, effective publication.
- 4.2 The species concept: Taxonomic Hierarchy, species, genus, family and other categories. Principles used in assessing relationships, delimitation of taxa and attribution of rank.
- 4.3 Plant exploration in India with special reference to Jammu and Kashmir, and Ladakh.
- 4.4 Concepts of phylogeography, endemism, plant migration, invasions and introduction.

UNIT 5: Angiosperm Phylogeny Group (IV) and its treatment.

15 Marks

- 1.1 Basal angiosperm; taxonomic description of Magnoliaceae (Magnoliids).
- 1.2 Basal, petaloid and commelinid monocots; taxonomic description of Araceae (basal), Orchidaceae (petaloid), Poaceae (commelinid) monocots.
- 1.3 Eudicots; taxonomic description of Ranunculaceae (superasterids).
- 1.4 Eudicots; taxonomic description of Fabaceae (fabids), Malvaceae (malvids), Asteraceae (campanulids) and Solanaceae (lamiids).

Mansingh
REGISTRAR
R. S. Singh

Note:

- I. Weightage of Entrance/Screening Test shall be as per the Selection Criteria notified vide No. Estab./C&R-NTW/22/1520-32 dated 01.09.2022 and uploaded in the University website www.jammuuniversity.ac.in