

SEMESTER-III

Max. Marks-45

Time- 3Hrs

PAPER – 1 BIOLOGY AND DIVERSITY OF SEED PLANTS-I

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus.

All questions carry equal marks

UNIT-I

General characters and diversity of Gymnosperms (seed plants without fruits).

Pilger and Melchior's (1954) system of classification.

Geological Time Table; Evolution of Seed Habit.

Palaeobotany-Fossils and Fossilization (Processes involved, type of fossils and

Importance of Fossils); Reconstruction of the following fossil plants:

Lyginopteris

Williamsonia

Cycadeoidea (=Bennettites).

UNIT-II

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of the following:

Cycas

Pinus

Ephedra

General characters of Angiosperms including primitive angiosperms (Amentiferae, Ranales, Magnoliales).

SEMESTER-III

Max. Marks-45

Time- 3Hrs

PAPER – II PLANT ANATOMY

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus.

All questions carry equal marks

UNIT-I

Diversity in plant forms-annuals, biennials and perennials.

Tissues-meristematic and permanent (simple and complex)

The Shoot system-shoot apical meristem and its histological organizations (monocot and dicot stem) Cambium-structure and functions.

Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm; Anomalous secondary growth (*Dracaena*, *Boerhaavia* and *Achyranthes*)

UNIT-II

Leaf-Type of leaves (simple and compound); Phyllotaxy.

Epidermis-uniseriate and multiseriate, epidermal appendages and their morphological types.

Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves; leaf abscission.

Stomatal apparatus and their morphological types.

Root system-the root apical meristem; the histological organization (monocot and dicot root)

Secondary growth in root.

Structural modification in roots-storage (*Beta*), Respiratory (*Rhizophora*), Epiphytic (*Vanda*).

SEMESTER-IV

Max. Marks-45

Time- 3Hrs

PAPER – I BIOLOGY AND DIVERSITY OF SEED PLANTS-II

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus.

All questions carry equal marks

UNIT-I

Taxonomy and systematics, fundamental component of taxonomy (identification, classification, description, nomenclature and phylogeny).

Role of chemotaxonomy, cytotaxonomy and taximetrics in relation to taxonomy.

Botanical nomenclature, principles and rules, principle of priority.

Type concept, taxonomic ranks.

Keys to identification of plants

Flower and types of inflorescence

UNIT-II

Salient features of the systems of classification of angiosperms proposed by Bentham and Hooker and Engler and Prantl.

Diversity of flowering plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Leguminosae, Apiaceae, Asclepiadaceae, Lamiaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae.

SEMESTER-IV

Max. Marks-45

Time- 3Hrs

PAPER – II PLANT EMBRYOLOGY

Note: Attempt five questions in all, selecting two questions from each unit.

Question No. 1 is compulsory (short answer type).

Nine questions are to be set spread over the entire syllabus.

All questions carry equal marks

UNIT-I

Flower- a modified shoot; functions of various floral parts.

Microsporangium, its wall and dehiscence mechanism.

Microsporogenesis, pollen grains and its structure (pollen wall)

Pollen-pistil interaction; self incompatibility.

Pollination (types and agencies); pollen germination (microgametogenesis).

Male gametophyte.

UNIT-II

Structure of Megasporangium (ovule), its curvature; Megasporogenesis and Megagametogenesis.

Female gametophyte (mono-, bi- and Tetrasporic).

Double fertilization.

Endosperm types and its biological importance.

Embryogenesis in dicot and Monocot; polyembryony

Structure of Dicot and Monocot seed.

Fruit types; dispersal mechanism in fruits and seeds.

PAPER – III PRACTICALS

Max. Marks- 90
Time-6 Hrs (2 Sessions)

Biology and Diversity of Seed Plants, Plant Anatomy and Plant Embryology

- 1 Describe/compare the given flowers A and B in semi-technical language giving V.S. of flowers, T.S. of ovaries, Floral diagrams and Floral Formulae. Identify and assign them to their respective families giving reasons.
- 2 Identify, classify and write morphological notes on the given specimens C and D (from Gymnosperms).
- 3 Cut Transverse Section and prepare a double-strained permanent mount of the given material (from angiosperm/gymnosperm). Identify giving reasons and show it to the examiner.
- 4 Identify, giving the important characters of identification, the spots 1 and 2 (one material/slide each from gymnosperms and embryology of angiosperms).
- 5 Write morphological notes on the specimens E and F (from angiosperms).
- 6 Dissect out the globular/heart-shaped embryo from the given material.
- 7 Note-book, Collection and Collection Report.
- 8 Viva-voce