

**2015**  
**BOTANY — HONOURS**  
**Third Paper**  
**Full Marks – 100**

*The figures in the margin indicate full marks*

*Candidates are required to give their answers in their own words as far as practicable*

**Module – V**

**(Full Marks – 50)**

1. Answer the following questions :
  - (a) What is glossopodium? Mention its function. 2
  - (b) 'Azolla is a potent biofertilizer' — Explain. 2
  - (c) Mention the morphological nature of 'trabeculae' in *Selaginella*. 1
  - (d) Distinguish between manoxylic and pycnoxylic wood. 2
  - (e) Name one resin-yielding and one drug-yielding gymnosperms. 2
  - (f) Name the principal cell types in transfusion tissue of *Pinus*. 1
2. (a) State the morphological nature of rhizophore in *Selaginella*. 5

**Or**

Discuss the evolutionary significance of *Rhynia*. 5
- (b) Briefly describe the development of male gametophyte of *Cycas* with suitable diagrams. 5

**Or**

State the geographical distribution of *Pinus* species in India. 5
3. (a) What are 'telome' and 'mesome'? Define the 'elementary processes' associated with the Telome theory. Explain how the origin of fertile structures in Sphenophyta and Filicophyta could be explained with the help of this theory. 2+5+4+4
- Or**
- Name the different organ-genera of reconstructed plant *Lepidodendron*. Draw and describe the leaf-cushion, stem anatomy and strobilus of *Lepidodendron* with suitable diagrams. 2+4+5+4

(b) Draw and describe the structure of male fructification in *Pinus* and *Gnetum*. State the embryogeny in *Pinus* with diagrams. 5+5+5

*Or*

Draw and describe the female fructifications of *Lyginopteris* and *Cordaites*. State their geological and geographical distribution. 6+5+4

### Module – VI

(Full Marks – 50)

4. Answer the following questions briefly :

- (a) What is phytoremediation? Give an example. 2  
 (b) What is beta diversity? 2  
 (c) What is cryopreservation? 1  
 (d) Define and draw an actinocytic stoma. 2  
 (e) Distinguish between leaf trace and leaf gap. 2  
 (f) What is plastochron? 1

5. (a) Discuss the role of seed-bank in the conservation of plant biodiversity. 5

*Or*

Describe briefly the 'Epibiotic theory' of endemism. 5

(b) State the anatomical adaptations in xerophytes. 5

*Or*

Discuss with suitable diagrams the ontogeny of trachea. 5

6. (a) What do you mean by ecotone and edge effect? State the difference between primary and secondary succession. Discuss the various seral stages of a hydrosere. 2+2+3+8

*Or*

Enumerate the phytogeographical regions of India according to D. Chatterjee (1960). Discuss the floristic composition of Western Himalaya. 7+8

(b) Explain intrastelar and extrastelar secondary growth in plants with examples. Describe the anomalous secondary growth in *Tinospora* root with diagrams. State the Korper-Kappe theory of root apical organization with illustrations. 4+6+5

*Or*

(i) Describe the ultrastructure of plasmodesmata with suitable diagrams. 5

(ii) Diagrammatically represent the evolution of stelar types. 5

(iii) Describe with suitable diagrams the ontogeny of stomata. 5