

## M.Sc. Sem.-3 Examination

501

Botany

March-2025

Time : 2-30 Hours]

[Max. Marks : 70

**Instructions:** All Questions carry equal marks

Attempt all Questions

Q I	Discuss the significance of nodal anatomy, including types of nodes and leaf gaps.	14
OR		
Q I	A. Explain the functional differentiation of p proteins in the phloem.	7
	B. Describe the structure and function of trichomes in plants	7
Q II	Describe the structure and development of anthers and ovules, including the formation of male and female gametophytes	14
OR		
Q II	A. Explain the concept of polyembryony in plants and its advantages.	7
	B. Write a short note on pollen-pistil interaction	7
QIII	Explain the phenomenon of sterility in plants and its significance in hybrid seed production.	14
OR		
Q III	A. Describe a case study for effective plant-pollinator interaction.	7
	B. Short note on Forensic Palynology	7
Q IV	Explain the role of various stains and mounting techniques in permanent preparations.	14
OR		
Q IV	A. Discuss the principles and applications of immunohistochemistry in plant research	7
	B. Describe the staining process for insoluble polysaccharides.	7
Q V	Attempt any 7 out of 12 MCQs/Short question (One- or Two-line answer)/ Fill in the blanks/True or False etc.	14
1	What are secretory ducts, and what is their function in plants?	02

(P.T.O)

- 2 Define laticifers and explain their role in latex production. 02
  - 3 What is reaction wood, and how does it differ in hardwoods and softwoods? 02
  - 4 What are the main components of the ovule? 02
  - 5 What environmental conditions might favour the occurrence of polyembryony? 02
  - 6 Difference between endospermic and non-endospermic seeds. 02
  - 7 List two types of apomixis and describe their applications in agriculture. 02
  - 8 What is the role of forensic palynology in criminal investigations? 02
  - 9 Name two key research journals that publish studies related to palynology. 02
  - 10 What are whole mounts, and how are they useful in studying plant structures? 02
  - 11 What factors should be considered when selecting a stain for a particular plant tissue? 02
  - 12 What are the key differences between temporary and permanent preparations in histology? 02
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