

Department of Botany
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M.Sc. BOTANY
III SEMESTER EXAMINATION DECEMBER 2024

Paper Name: **Developmental and Structural Botany**

Paper Code: **MBO-CC301**

Time: **2:30 hours**

Maximum Marks: **60**

Note: This paper has 3 sections A, B, and C.

Section A: Answer all the questions. **Section B:** Attempt any 4 out of 6.

Section C: Attempt any 2 out of 3.

Abbreviations used:

CLO-Course Learning Outcomes

CLO 1: recognize the structure and development of male and female gametophytes, pollination, fertilization, embryogeny and seed (understand);

CLO 2: describe the origin and development of apical meristem; morphogenesis and organogenesis in plants (understand);

CLO 3: discuss origin, development, differentiation and periodicity of vascular cambium and predict the age of plants (understand/create); and

CLO 4: differentiate between gymnospermous and angiospermous secondary xylem and phloem (analyze).

BTL-Bloom's Taxonomy Levels

1- Remembering, 2-Understanding, 3-Applying, 4-Analyzing, 5-Evaluating, 6-Creating

SECTION A

Very Short Type Question (15 questions)

15 x 1 = 15 marks

Q.No.	Questions	Marks	CLO	BTL
1	Parthenogenesis refers to.....	1	1	1
2	Explain plumbagella type of embryo sac development.	1	2	2
3	Name three factors responsible for transition to flowering.	1	1	1
4	In alternate leaf development, the angle of divergence is.....	1	1	1
5	How are tetrasporic embryosacs formed?	1	1	1
6	Fibonacci series refers to.....	1	2	2
7	What is heteromorphic self-incompatibility.	1	1	2
8	What are the campylotropous ovules?	1	1	3
9	Explain the term "Rhytidome".	1	2	2
10	What is Tylosis?	1	1	1
11	What is meant by the "transformative cell division" of cambial initials?	1	2	2
12	Why do fruits of tropical region have a heavier cuticle, compared to fruits of temperate zone?	1	4	1
13	Under what conditions does the cambium have to undergo anticlinal cell division?	1	4	1
14	Which of the heartwood and sapwood will decay faster, if exposed freely to air?	1	5	1
15	What is the place of origin of phellogen in roots?	1	1	2

Please turn over

SECTION B

Short Type Question. (Attempt any **FOUR** out of six)

4 x 5 = 20 marks

Q.No.	Question	Marks	CLO	BTL
1	Explain the structure and development of pollen wall.	5	2	3
2	Write a brief note on the ABCD and ABCDE models of flower development.	5	2	2
3	Explain briefly the concept of apomixis and its significance in plant reproduction.	5	2	3
4	Mention the types of cell division in fusiform initials and discuss their significance.	5	4	1
5	Differentiate between active cambium and dormant cambium.	5	4	2
6	Describe the structure and function of periderm in plants.	5	2	1

SECTION C

Long type Question (Attempt any **TWO** out of three)

2 x 12.5 = 25 marks

Q.No.	Question	Marks	CLO	BTL
1	Describe the organization and development of shoot apical meristem and explain molecular mechanism to regulate it.	12.5	4	2
2	Describe the comparative features of the structural organization of secondary xylem and secondary phloem.	12.5	4	3
3	A. Draw the well-labelled diagrams of storied and nonstoried cambia.	3+3	6	4
	B. Discuss the types and significance of P-proteins in the phloem of plants.	6.5	2	