

Department of Botany
School of Chemical & Life Sciences
Jamia Hamdard, New Delhi-110062

M.Sc. BOTANY
III SEMESTER EXAMINATION DECEMBER 2025

Paper Name: **Developmental and Structural Botany**

Paper Code: **MBOCC301**

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 5 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
	A. Write an informative note (1-2 lines) on the following.			
1	State the ploidy of the primary endosperm nucleus formed during double fertilization.	1	1	1
2	Mention one application of in vitro fertilization in plant breeding.	1	1	2
3	What is the function of calcium in pollen germination media?	1	1	1
4	Name one marker gene used to identify stem cell niche in the <i>Arabidopsis</i> shoot apical meristem.	1	2	1
5	What is the relationship between the peripheral zone of the SAM and leaf initiation ?	1	2	2
6	What is the function of calyptrogen in root apical meristem?	1	2	1
7	State how many nuclei are present in a polygonum-type nature embryo sac.	1	1	1
	B. Differentiate between the following:			
8	Porous and non-porous wood.	1	4	2
9	Angiospermous and gymnospermous rays.	1	4	2
10	Active and dormant cambium.	1	3	2
11	Simple and compound sieve tubes.	1	3	2
12	Anomocytic and anisocytic stomatas.	1	3	2
13	Vascular bundles of stem and root.	1	3	2
14	Fusiform initials and ray initials.	1	4	2
15	Pollination in angiosperm and gymnosperm.	1	4	2

Please turn over

SECTION B

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

5 x 4 = 20 marks

Q.No.	Question	Marks	CLO	BTL
1	Explain double fertilization and its importance.	4	1	2
2	Write a note on pollen structure.	4	1	4
3	Explain ABC model in flower development.	4	2	2
4	Write short note on the arrangement of parenchymatous cells in the T.S. of xylem.	4	3	4
5	Give a brief account on the structural characteristics of the constituent of the angiospermous wood.	4	4	2
6	Give a brief account of formation and role of P-protein.	4	4	2

SECTION C

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

2 x 12.5 = 25 marks

Q.No.	Question	Marks	CLO	BTL
1	With the help of different theories discuss shoot apical meristem in detail.	12½	2	2
2	With the help of labelled sketch describe the activity of lateral meristem with special reference to their derivatives production.	12½	4	2
3	Discuss self-incompatibility with specific reference to the molecular model in Brassicaceae.	12½	1	4

END OF QUESTION PAPER