

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

Your Roll No .....

**B.Sc. (HONS WITH RESEARCH) / B.Sc. BOTANY**  
**III SEMESTER EXAMINATION DECEMBER 2024**

Paper Name: **Plant Anatomy and Embryology**

Paper Code: **BBO DSC301**

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:                                                                                                                        |
| CO-Course Outcomes                                                                                                                         |
| <b>CLO 1:</b> develop an understanding of concepts and fundamentals of plant anatomy and embryology (understand);                          |
| <b>CLO 2:</b> develop critical understanding of the evolution of the concept of organization of shoot and root apex (understand);          |
| <b>CLO 3:</b> evaluate the adaptive and protective systems of plants (evaluate);                                                           |
| <b>CLO 4:</b> recall the history of reproductive biology of angiosperms (remember); and                                                    |
| <b>CLO 5:</b> recognize the importance of genetic and molecular aspects of flower development, pollination and fertilization (understand). |
| <b>BTL-Bloom's Taxonomy Levels</b>                                                                                                         |
| 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     | Difference between albuminous and exalbuminous seed.                                        | 1     | 1   | 1   |
| 2     | Explain Aril with example.                                                                  | 1     | 1   | 2   |
| 3     | What is polyembryony? Give an example.                                                      | 1     | 5   | 1   |
| 4     | What is scutellum?                                                                          | 1     | 1   | 1   |
| 5     | Autochory refers to..                                                                       | 1     | 1   | 1   |
| 6     | What is double fertilization?                                                               | 1     | 5   | 1   |
| 7     | What are the characteristics of helobial endosperm?                                         | 1     | 5   | 2   |
| 8     | What are the two main types of meristematic tissue?                                         | 1     | 2   | 1   |
| 9     | Why is vascular cambium essential in secondary growth?                                      | 1     | 1   | 2   |
| 10    | If a tree trunk lacks cork cambium, what protective tissues might arise?                    | 1     | 3   | 3   |
| 11    | What changes occur in vessel structure during the formation of spring wood and autumn wood? | 1     | 1   | 4   |
| 12    | Is secondary growth more critical for woody or herbaceous plants? Justify your answer.      | 1     | 3   | 5   |
| 13    | Suggest a study to observe the impact of stomatal density on transpiration in xerophytes.   | 1     | 3   | 6   |
| 14    | Which is more effective in preventing water loss: cuticle or suberin? Why?                  | 1     | 3   | 5   |
| 15    | Which plant adaptation helps in water retention in arid environments?                       | 1     | 3   | 3   |

***Please turn over***

### **SECTION B**

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

4 x 5 = 20 Marks

| <b>Q.No.</b> | <b>Question</b>                                                                        | <b>Marks</b> | <b>CLO</b> | <b>BTL</b> |
|--------------|----------------------------------------------------------------------------------------|--------------|------------|------------|
| 1            | Discuss the structure and classification of ovules in plants.                          | 5            | 1          | 2          |
| 2            | Differentiate a monocot embryo from a dicot embryo.                                    | 5            | 1          | 4          |
| 3            | Write a short note on apomixis and its practical application.                          | 5            | 5          | 1,4        |
| 4            | Differentiate between secretory ducts and laticifers with examples.                    | 5            | 3          | 4          |
| 5            | Design a model to demonstrate the processes of primary and secondary growth in plants. | 5            | 2          | 6          |
| 6            | Assess the importance of adaptations in xerophytes for survival in deserts.            | 5            | 3          | 5          |

### **SECTION C**

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

2 x 12.5 = 25 Marks

| <b>Q.No.</b> | <b>Question</b>                                                                                       | <b>Marks</b> | <b>CLO</b> | <b>BTL</b> |
|--------------|-------------------------------------------------------------------------------------------------------|--------------|------------|------------|
| 1            | Compare internal structure of dicot stem and monocot stem with the help of neat and labelled diagram. | 12.5         | 1          | 4,6        |
| 2            | A. Write a note of embryo-endosperm relationship.                                                     | 6            | 5          | 1          |
|              | B. Differentiate between simple and complex permanent tissues with suitable examples.                 | 7.5          | 2          | 4          |
| 3            | Explain with diagram the structure and types of embryosac.                                            | 12.5         | 1          | 2,6        |

**\*\*\*\*END OF QUESTION PAPER\*\*\*\***