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GANDHI INSTITUTE OF ENGINEERING AND TECHNOLOGY UNIVERSITY, ODISHA, GUNUPUR

(GIET UNIVERSITY)

M. Sc. (Fourth Semester) Regular Examinations, April – 2025

22LSPSPC401 - Plant Anatomy and Embryology

(Life Science - Plant Science)

Time: 3 hrs | Maximum: 70 Marks

(The figures in the right-hand margin indicate marks.)

PART – A **(2 x 10 = 20 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. What is periderm?	CO1	K1
b. Define annual ring. How is it formed in woody plants?	CO1	K2
c. Differentiate between uniseriate and multiseriate rays?	CO1	K3
d. Differentiate between anatropous and orthotropous ovules?	CO2	K2
e. Describe the role of tapetum in pollen development?	CO2	K4
f. What is the role of antipodal cells in the embryo sac?	CO2	K3
g. What are polyembryony?	CO3	K4
h. Define megasporogenesis?	CO3	K3
i. What are haustorial structures in endosperm?	CO4	K2
j. Explain the term "cleavage polyembryony"?	CO4	K3

PART – B **(10 x 5 = 50 Marks)**

Answer ***ANY FIVE*** questions	Marks	CO #	Blooms Level
2. a. What are growth rings? Explain their formation and significance?	5	CO1	K1
b. Discuss the formation and components of periderm. What is its role in secondary growth?	5	CO1	K2
3.a. Describe the structure and role of the secretory tissues in plants. How are they classified?	5	CO1	K4
b. Describe the arrangement of mechanical tissues in plants?	5	CO1	K2
4. a. Describe the histological organization of the shoot apical meristem (SAM)?	5	CO2	K1
b. Explain the various theories proposed to describe the organization of the root apical meristem?	5	CO2	K3
5.a. Explain the role of the tapetum in microsporangium development. Compare the two types of tapetum?	5	CO2	K2
b. Describe the process of microsporogenesis. How is the tetrad of microspores formed and arranged?	5	CO3	K4
6. a. What is megasporogenesis? Explain the process from the differentiation of the megaspore mother cell?	5	CO3	K3
b. Explain the concept of monosporic development of the embryo sac?	5	CO3	K3
7.a. What are the main differences between monosporic and bisporic female gametophytes? Explain with suitable examples?	5	CO3	K2
b. What is the significance of the synergids in the female gametophyte? Describe their structure and their role during fertilization in angiosperms.	5	CO4	K3
8. a. Discuss the role of endosperm in seed development. How does it contribute to the nourishment of the developing embryo?	5	CO4	K4
b. Define apomixis and differentiate it from sexual reproduction in plants. Discuss the various mechanisms by which apomixis occurs in angiosperms.	5	CO4	K4

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