SEMESTER – I

ANGIOSPERM ANATOMY, REPRODUCTIVE BOTANY AND PALYNOLOGY

Course Code: BO1141

I. Write a short note on the following. All questions compulsory. (10 x 01 = 10)

1. Pits
2. Lenticles
3. Anomocytic stomata
4. Tapetum
5. Periderm
6. Casparian strips
7.Conjunctive tissues in roots
8. Diacytic stomata
9. Stone cells
10. Stinging hairs
11. Amphivasal vascular bundles
12. Proembryo
13. Pollen kit
14. polarity of pollen grains
15. Anther tapetum
16. Complementary cells
17. Eustele
18. Fibre – tracheid
19. Multiple perforation plate
20. Aleurone layer
21. Quiescent centre
22. Campylotropous ovule
23. Idioblast
24. Tyloses
25. Endothecium
26. Sexine
27. Ergastic substances
28. Simple tissue
29. Radial bundle
30. Bifacial leaf
31. Secondary meristem
32. Root cap
33. Bulliform cells
34. Bisporic embryosac
35. Pollinia
36. Funicle
37. Middle lamella

38. Shoot apical meristems
39. Stomatal apparatus
40. Heart wood
41. Double fertilization
42. Pollination
43. Vascular cambium
44. Hypocotyl
45. Exine
46. Micropyle
47. Phloem
48. Bark
49.Amyloplast

II. Answer any eight (8 x 2 = 16 marks)

1. Name the secretory tissue present in Nepenthes.
2. What are Radial Vascular bundles.
3. Explain the functions of parenchyma in plants.
4. Mention the type of vascular bundles in Dracena.
5. Comment on Anatropous ovule.
6. What is pollen allergy?
7. What is symplast and apoplast.
8. What are Cystolith and Raphides?
9. Differentiate ring porous and diffuse porous wood.
10. What is Apical cell theory?
11. Explain nuclear endosperm.
12. What is polyembroyony? Mention its types.
13. What is parthenocarpy? Explain its significance.
14.Explain the economic importance of pollen grains.
15. Why gymnosperms and angiosperms woods are known as soft wood and porous wood respectively?
16. Compare cambial ring formation in dicot stems with that of the dicot root.
17. Comment on calcium carbonate crystals in plants.
18. Illustrate the arrangements of different tissues in a bicollateral vascular bundle.
19. Differentiate storied and non – storied cambium.
20. Comment on endosperm haustoria.
21. How Bignonia stem overcomes pulling and cutting tearing forces?
22. Briefly explain the structure of a monocot embryo.
23. Discuss important pollen storage techniques.
24. Comment on sieve tubes elements.
25. Name the tissues arise from the parietal cells of the anther.
26. Comment on the occurrence of fats and oils in plants.
27. Name the histogens of a dicot root apex and mention their derivatives.
28. Compare amphivasal and amphicribal vascular bundle.

29. Write two differences between cystolith and druses.
30. Explain the physiology and biochemistry of incompatibility.
31. Differentiate amoeboid tapetum and secretory tapetum. List the important functions of tapetum.
32. Differentiate between cork cambium and vascular cambium.
33. Diagrammatically represent porogamy and chalazogamy.
34. Discuss the evolutionary trend in xylem vessel thickening.
35. Differentiate casuarina type and common type of root apex in plants.
36. The development of endosperm in Cocos nucifera deserves special mention. Why?
37. Explain how characters of the apertures are handled in NPC system of classification.
38. How do annual rings indicate the age of a plants?
39. What are the basic concepts of apical cell theory?
40. What are tyloses and how they are formed?
41. Write short note on parthenocarpy?
42. Differentiate heart wood and sap wood.
43. How simple pit differ from bordered pit?
44. What is double fertilization?
45. List out the functions of xylem.
46. What are medullary rays?
47. Mention the difference between gums and resins.
48. What is ruminate endosperm?

III. Answer any six (6 x 4 = 24 marks)

1. Differentiate the nitrogenous and non – nitrogenous products found in plants.
2. Explain the extra cell wall materials in plants.
3. What is meristem? How it is classified?
4. Explain the difference between protoxylem and metaxylem.
5. Write note on the extra- stelar secondary growth in stem.
6. With the help of diagram describe the structure of mature anther.
7. Explain monosporic type of embryo sac with polygonum type development.
8. Explain the most important features of pollen.
9. Explain the organization of shoot apex.
10. With the help of labelled diagram describe the longitudinal section of phloem and discuss its components.
11. Explain apical cell theory and histogen theory with labelled sketches.
12. Draw a sectional view of a dorsiventral leaf and label the parts.
13. How endosperm is formed in dicots? Explain the different types of endosperm in dicots.
14. With the help of labelled diagram, explain the structure of embryosac and functions of individual components.
15. Discuss the strategy employed by the tissues outside the pericycle in a dicot stem to deal with the high outward pressure of secondary vascular tissues.
16. Enumerate the different types of stomata.
17. Discuss the economical and taxonomical significance of pollen grains.
18. Mention the different types of meristems. How meristems are classified?

19. Give a brief account of laticifers.
20. Mention different types of meristems? How are meristems classified?
21. Describe the transverse section of a grass leaf with the help of a labelled sketch.
22. With the help of labelled diagram explain the longitudinal section of an anatropous ovule with polygonum type embryo sac.
23. Illustrate the structure of a mature embryo in *Capsella* and mention the role of each component.
24. Write a brief account of the anatomical features of bark and lenticel.
25. With the help of diagrams, explain the different types of vascular bundles.
26. What is wood? Write an account of different classes of woods.
27. What is pollen viability? Explain the different methods employed for the testing of viable pollens.
28. Write a brief account on phloem.
29. Give an account on Root apex organization.
30. Describe the primary structure of a dicot root.
31. Write notes on simple mechanical tissues.
32. Describe the extra stelar secondary thickening in dicot stem.
33. Comment on the functions of cell wall.
34. Describe the structure of an isobilateral leaf.
35. Describe the development of a monocot embryo.
36. Comment on endosperm and its types.
37. Briefly describe the different types of meristems based on origin and development.
38. What is pollen allergy? Describe a brief account on pollen allergy.
39. What is endosperm and how it is formed?
40. What is a concentric vascular bundle?
41. Point out differences between root and stem.
42. Distinguish porous wood and non-porous wood.
43. Mention the different types of stomata present in angiosperm.

IV. Write essay on any two of the following. (2 x 15 = 30 marks)

1. Explain the Anomalous secondary growth in *Bignonia* stem with neat labelled diagram.
2. What are the different types of permanent tissues? Explain with diagram.
3. What is pollination? Explain different types and Contrivances.
4. Compare the primary structure of Dicot stem and dicot root with ground plan.
5. With suitable diagrams, describe microsporogenesis.
6. What are mechanical tissues? Describe their distribution in the different parts of the flowering plants?
7. Describe anomalous secondary growth in Dracena with suitable labelled sketches.
8. What are ergastic substances? Discuss the various classes of ergastic substances in plants giving importance to utility to plants or economic importance.
9. With the help of suitable diagrams describe the ultrastructure of plant cell wall.
10. Compare the different stages of secondary growth of stem with that of roots in dicots.
11. What are medullary vascular bundles? With the help of suitable diagrams explain the anomalous secondary growth in dicot stem due to the presence of medullary bundles.
12. What is an embryosac? Explain the development adoxa type of embryo sac.

13. Write an account on permanent tissues.
14. Describe the secondary thickening in dicot root.
15. Describe the structure of an anther and explain microsporogenesis.
16. Describe the various types of ovules met in angiosperm.
17. Describe the structure and functions of complex tissues.
18. Describe the pattern of abnormal growth in *Boerhaavia* stem.

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