

QUESTION BANK

BSc BOTANY

**CORE COURSE 1V – METHODOLOGY AND
PERSPECTIVES IN PLANTSCIENCE**

Dr. Deepa P.

MICROTECHNIQUE

Two marks questions

1. Distinguish between magnification power and resolving power of the microscope.
2. Shortly describe the essential components of the conventional light microscope.
3. What is killing and fixing? Mention it's significance.
4. Give a short account on killing and fixing agents.
5. Name of any two commonly used fixatives. Mention it's constituents.
6. Elucidate the features of rocking microtome.
7. Distinguish rotary microtome from rocking microtome.
8. What you mean by dehydration? Give examples for dehydrating agents.
9. Define clearing. Name the reagents commonly used for clearing.
10. Write a short note on infiltration.
11. Write the procedure to prepare the stain, acetocarmine.
12. Mention the significance of safranin and write the procedure of safranin preparation.
13. What is microtomy? How does it overcome the limitations of free hand sectioning?
14. How can we remove wax from the microtome sections? Write the importance of wax removal.
15. Define resolution and numerical aperture.
16. What is the principle of Electron Microscopy? Mention it's applications.
17. Write note on different parts of dissection microscope.
18. Name the optical components and their functions in compound light microscope.
19. Draw the schematic diagram of SEM.
20. Illustrate the schematic diagram of TEM.
21. What is Carnoy's fluid? Write it's composition.
22. How does dehydration of plant tissues possible in microtomy?
23. What is FAA? Write it's composition.

Five marks questions

24. Explain light microscopy with the help of the illustration.
25. What is simple microscope? Describe the working of dissection microscope.
26. Describe the principle and working of compound light microscope.

27. Compare the features of light microscope with electron microscope.
28. What is microtomy? Shortly describe different type of microtomes.
29. How can we classify the stains based on chemical nature? Write the significance of staining.
30. How does the image formation occur in TEM?
31. Give an account on killing and fixing. Write the name and composition of the reagents used for killing and fixing.

Ten marks questions

32. Write an essay on principle and working of the bright field microscopes.
33. Explain the working of Transmission Electron Microscope and Scanning Electron Microscope.
34. Explain different steps of paraffin method, the most and conveniently used method in serial sectioning.
35. Discuss different parts of the compound microscope and explain the image formation.

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CORE COURSE VI – PLANT BREEDING

Dr. Deepa P.

PLANT BREEDING

I. Two marks questions

1. Mention the role of ICAR in plant breeding.
2. Plant breeding becomes more desirable agronomically and economically. Why?
3. Write any four objectives of plant breeding.
4. Write some important achievements in agriculture through plant breeding.
5. Give a note on plant genetic resources.
6. Define domestication and mention its role in plant breeding.
7. What do you mean by plant introduction?
8. Write a note on genetic erosion.
9. What is the relevance of in-situ germplasm conservation in plant breeding?
10. Distinguish between in-situ and ex-situ germplasm conservation.
11. Elucidate different methods of ex-situ germplasm conservation in plant breeding.
12. Shortly write on NBPGR.
13. What do you mean by plant quarantine?
14. What is acclimatization?
15. What is the purpose of plant introduction?
16. Write notes on heterosis.
17. What is mass selection?
18. Write any four applications of mass selection in agriculture.

19. What is the contribution of mass selection in crop improvement?
20. Write on pureline selection.
21. What are the major characteristics of purelines?
22. How is pureline selection differed from mass selection?
23. How can you distinguish a clone from a pureline?
24. Distinguish inbreds from purelines.
25. Define clonal selection.
26. What is the significance of pureline selection in crop improvement?
27. Define hybridization and mention it's significance.
28. Write a note on inter-specific hybridization.
29. How is inter-generic hybridization differed from inter-specific hybridization?
30. Write note on synthetic varieties.
31. Distinguish composite varieties from synthetic varieties.
32. Define inbreeding depression and hybrid vigour,
33. How does the inbreeding depression affect the self and cross pollinated species?
34. What is the genetic basis of heterosis according to overdominance hypothesis?
35. Write note on different types of mutations.
36. Shortly write the molecular basis of mutation.
37. How is mutation applicable in plant breeding?
38. Elucidate the applications of mutation breeding in crop improvement.
39. Write any four mutant crop varieties that produced by mutation breeding.

40. Define nullisomy and monosomy.
41. How can we identify autopolyploids from allopolyploids?
42. Distinguish euploidy from aneuploidy.
43. Why is polyploidy significant in crop improvement?
44. How can we induce polyploidy in plants?
45. Mention the role of allopolyploidy in crop improvement.
46. Write notes on disease resistance.
47. Differentiate disease resistance from tolerance.
48. Can somaclonal variation induce disease resistance in crop plants? Justify your answer.
49. Give a short account on various techniques of emasculation.
50. What you mean by cross pollinating plants? Give examples.

II. Five marks questions

1. Briefly explain the role of plant breeding in crop improvement.
2. Write shortly on plant genetic resources and it's components.
3. What is ICAR? Write it's role in agriculture.
4. Discuss on germplasm conservation methods.
5. Write on plant introduction agencies in India.
6. Describe the procedure of plant introduction.
7. Shortly describe the plant quarantine activity of NBPGR.
8. Elucidate the merits and demerits of plant introduction.

9. Write and schematically represent the procedure of mass selection for developing a new crop variety.
10. Shortly discuss the merits and demerits of mass selection in plant breeding.
11. Schematically explain the procedure of pureline selection.
12. Describe the advantages and disadvantages of pureline selection.
13. What are the major achievements in agricultural field of India by pureline selection method?
14. Which is the extensively used selection method in plant breeding for crop improvement? Justify your answer.
15. Compare mass selection with pureline selection.
16. Explain the characteristic features of clonal crops.
17. Describe the procedure of clonal selection in asexually propagated species.
18. Write a note on merits and demerits of clonal selection.
19. Briefly explain different types of hybridizations in plants by giving suitable examples.
20. Describe the steps involved in production of high quality crops by hybridization.
21. Write the characteristic features and applications of heterosis in crop improvement.
22. Discuss the dominance hypothesis that explains the genetic basis of heterosis.
23. Explain the theories related to genetics of heterosis.
24. What is mutation? Describe different types of mutagens.
25. Explain the steps involved in mutation breeding.
26. What is polyploidy? Discuss various types of polyploidy in plants.
27. Give an account on different types of disease resistances in plants.

28. Elaborately discuss about various methods in plant breeding for generation of disease resistant crop plants.
29. Briefly describe various types of selection methods for crop improvement.

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**CORE COURSE 1 – ANGIOSPERM
ANATOMY**

Dr. Deepa P.

ANGIOSPERM ANATOMY

2 Mark questions

1. What are tyloses? Mention their function
2. Write the features of meristematic tissue.
3. Classify meristem based on their position.
4. Classify meristem based on their origin.
5. Classify meristem based on their plane of division what is calyptra?
6. Write notes on quiescent centre.
7. Compare the shoot apex and root apex.
8. Explain histogen theory.
9. Explain Tunica corpus theory.
10. What is the function of sclerenchyma fibres?
11. Comment on bordered pits.
12. What are lenticels?
13. Differentiate between amphivasal and amphicribal bundles.
14. Give the details of the components of periderm.
15. What is meant by leaf gaps?
16. What is plasmodesmata?
17. What are hydathodes?
18. What is the peculiarity of bicollateral vascular bundle.
19. Explain the types of concentric vascular bundles with example.
20. Give the details of the components of bark.
21. How can meristems be classified based on position?
22. What is quiescent centre?
23. Explain the functions of collenchyma.
24. Write notes on sclerenchyma fibres.
25. Explain the functions of sclerenchyma
26. Write notes on sclereids.
27. Comment on xylem tracheids.
28. What are the functions of xylem vessels?
29. Differentiate between protoxylem and metaxylem.
30. Write notes on xylem fibres.
31. What are the characteristics of companion cells?

32. Write notes on phloem fibres with suitable examples.
33. Explain the structure of digestive gland in *Nepenthus*.
34. Explain the structure of hydathode.
35. What are extrafloral nectaries? Give examples.
36. Comment on casperian thickening.
37. What are two types of initial cells in cambium? How they differ from each other?
38. Describe the formation of cambial ring in dicot root.
39. Differentiate between heart wood and sap wood.
40. Describe the activity of cambial ring in dicot root.
41. Write note on plasmodesmata.
42. Explain the types of calcium oxalate crystals seen in plant cells.

5 Mark questions

43. What are laticifers? Explain.
44. Differentiate between diffuse porous wood and ring porous wood with examples.
45. Explain the kinds of parenchyma.
46. Write note on parenchyma and its function.
47. Explain the kinds of collenchymas.
48. Explain the structure of tracheids and their functions.
49. Explain the wall thickening patterns in xylem vessels.
50. Comment on sieve elements of phloem.
51. Briefly explain the components of phloem.
52. Briefly explain the external secretory tissues in plants.
53. Explain the different types of vascular bundles.
54. Give the different properties of cell wall.
55. Explain the primary structure of dicot stem leaf.
56. Explain the primary structure of dicot root.
57. Explain the structure of monocot root.
58. Explain the structure of monocot stem.
59. Explain the structure of dorsiventral leaf.
60. Explain the structure and formation of lenticel.
61. Explain the structure of isobilateral leaf.

10 Mark questions

62. Compare and contrast the structure of monocot and dicot stem.
63. Compare and contrast the structure of monocot and dicot root.

64. Compare and contrast the structure of monocot and dicot leaf.
65. Explain the structure of secondary cell wall.
66. Explain the reserved food materials seen in cells.
67. Describe the intrastelar and extrastelar secondary growth in dicot root.
68. Describe the secondary growth in dicot stem.
69. With the help of labelled diagrams, describe the anomalous secondary growth in Boerhaavia.
70. What are tissues? Explain the different types of simple permanent tissues
71. What are tissues? Explain the different types of complex tissues.