DEPARTMENT OF BOTANY

QUESTION BANK

SEMESTER -V

Core-11 (Reproductive biology of Angiosperms)

A. Short question (1 mark each)

1. Name a family of angiosperm where pollini is found.
2. How many sporangia are present in a typical anther?
3. Which phase in angiosperm is very inconspicuous and extremely reduced?
4. Where compound pollen grain is found?
5. How many microspores are formed from each microspore mother cell of cyperaceae family?
6. Name the two types of tapetum usually recognised in angiosperms.
7. How many walls found in mature anther?
8. Name the most common type of embryo sac.
9. Name the term used for 'arrangement of ovule in the ovary'.
10. What is Megasporogenesis?
11. What is geitonogamy?
12. What are Cleistogamous plants?
13. Name a water pollinated plant.
14. What is self-incompatibility?
15. Name a suitable plant which shows the Phenomenon of ornithophily.
16. What is Cheiropteriphily?
17. Who proposed 'opposite s-allete concept'?
18. Which family has gametophytic self-sterile plants?
19. What is porogamy?
20. What is polyspermy?
21. Who discovered double fertilization?
22. What is heterofertilization?
23. Name a plant in which endosperm is watery in nature.
24. Give one common example which shows mosaic endosperm.
25. What is perisperm?
26. Which family has characteristics of Pseudo embryo sac?
27. Give an example among angiosperm where polyembryony is found?
28. What is Apomixis?
29. What is parthenogenesis?

30. What is MGU?
31. What is hydrochory?
32. Give an example of winged seeds.
33. Name the structure which help seeds to float in air by parachute mechanism.
34. Name a plant in which persistent style is helpful in dispersal of seed.
35. Which family has characteristics of smallest seeds?
36. Name the site where proteins causing gametophytic self-sterility(GSI) are located.
37. What is sporopollenin.
38. Which is the most common type of ovule?
39. Name the type of ovule where the body is upright with micropyle, chalaza and funicle falling in a straight line.
40. What is the term used for "Pollination by snail ?
41. Where aril is found?
42. Give a characteristics feature of wind pollinated plants.
43. Which is responsible for synthesis of exine protein in pollen grain?
44. What is the diploid structure present in the ovule of angiosperm just before fertilization?
45. Name the kind of pollination found in Lotus.
46. Expand NPC.
47. What is massule?

49. Write any contribution of P.Maheswari.

48. What is Chasmogamy?

50. What is the chief constituent of pollen kit?

B. Long questions (8 marks each)

1. Describe briefly about the development of male gametophyte in angiosperms..
2. Give an illustrated account of the development of the female gametophyte of angiosperms.
3. Describe about different type of embryo sac.
4. Describe briefly about the contrivances of self & cross pollination.
5. Describe about various agent and type of pollination found in angiosperms.
6. Describe about self incompatibility.
7. Describe about types & develoment of endosperm.
8. Describe about double fertilization.
9. Describe about development of embryo.
10. Describe about different structure of seed & its dispersal.
11. Explain about polyembryony, its causes & applications.
12. Describe about agrobacterium mediated germline transformation.
13. Describe about apomixis, its causes & applications.
14. Describe about germline transformation by electrofusion method.

15. Describe about germline transformation by biolistic method.
16. Explain about contribution of P. Maheswari to plant embryology.
17. Explain about contribution B. M Johri to plant embryology.
18. Describe about palynology and its scope.
19. Describe about structure and types of ovule.
20. Describe about history and scope of embryology.

Core 12 (Plant Physiology)

A. Short question (1 mark each)

1. What is a colloid ?
2. What do you mean by diffusion ?
3. What is osmosis ?
4. What is diffusion ?
5. Who discovered diffusion ?
6. What is D.P.D ?
7. What is T.P ?
8. What is osmotic pressure ?
9. What is diffusion pressure?
10. What is endosmosis?
11. What is exosmosis?
12. What is plasmolysis?
13. Who proposed mosaic hypothesis of permeability?
14. What is imbibition ?
15. What is water potential ?
16. What is wilting coefficient?
17. Is soil temperature affects absorption of water?
18. Can epiphytes absorb water?
19. Who coined the term root pressure?
20. What is transpiration?
21. What is stomata and what is its role?
22. What is guttation?
23. What is the critical deficiency level of sulfur?
24. In the absence of O2, which type of physiological disease is found in potato?
25. What is the full form of ATP ?
26. What are binding proteins?
27. When guard cells become faccid?
28. What is aeropanics?
29. What are aquaporins ?
30. What are plant growth regulators?
31. Who discovered auxin?

32. Which hormone induces cell elongation?
33. What is tropic movement?
34. Which part of the plant contains highest level of auxin?
35. Write the molecular formula of gibberlin.
36. Which substance in plants capable of stimulating cytokinesis?
37. In which part of the plants cytokinins are synthesized?
38. Which is the plant growth inhibitor?
39. Who first isolated abscissic acid ?
40. Write the molecular formula of abscissic acid ?
41. Is abscissic acid a potent inhibitor of seed germination?
42. Which is a fruit ripening hormone?
43. Write the molecular formula ethylene?
44. Name sone of the synthetic growth retardants?
45. Which is a long day plant?
46. Why some plants are named as long day plants ?
47. Why some plants are named as short day plants ?
48. What do you mean by critical day length ?
49. What is florigen ?
50. Write is phytochrome?

B. Long questions (8 marks each)

1. Differentiate between osmotic potential and pressure potential of a cell.
2. Define an establish relationship among O.P, T.P, W.P and D.P.D.
3. Discuss the mechanism of water absorption by plants.
4. Differentiate between active absorption and passive absorption.
5. Describe factors affecting water absorption.
6. Describe various theories relating to ascent of sap.
7. Describe the path of water from root hair to leaf.
8. Discuss the mechanism of opening and closing of stomata.
9. Describe various methods of transpiration measurement.
10. Give an account of factors affecting transpiration.
11. Give an account of micro and macro elements.
12. Describe deficiency symptoms of major elements.
13. Describe the mechanism of absorption of mineral salts by root of higher plants.
14. Explain different theories of the absorption of salts in plants.
15. Discuss in detail the causes and types of seed germination.
16. Describe the process of translocation of solute in plants.
17. Give an account of physiological activities of plant growth hormones.
18. What is abscission? Discuss it in the light of different theories.
19. Write an account of photoperiodism.
20. Describe vernalization in detail.

DSE-1 (Analytical techniques in plant sciences)

A. Short questions (1 mark each)

1. What is the role of Agarose in gel electrophoresis?
2. Write an application of freeze fracture in electron microscope.
3. Mass to charge ratio is used to determine protein identity using _____ technique.
4. Centrifugal force is used in which biological instrument ?
5. What is the role of SDS in SDS-PAGE.
6. Name the molecule used to stain DNA during gel electrophoresis.
7. State Beer Lambert's law.
8. Which test would you adopt to test goodness of fit?
9. What are the three measures of central tendency?
10. Which of the microscopes is usually good for unstained specimens?
11. If you were given a specimen of an active, motile microorganism, which microscope would be the most effective in visualizing the live microbe
12. Scanning electron microscopy is most often used to reveal _____.
13. If magnifying power of objective is 45X and magnifying power of eye piece is 10X. Find the magnifying power of microscope.
14. Which microscopy is used to visualise sub cellular components of cells.
15. Name the kind of electrophoretic technique used to separate proteins.
16. Which technique is used to distinguish between live and dead cells?
17. Write the full form of FISH.
18. In which type of chromatography, the stationary phase held in a narrow tube and the mobile phase is forced through it under pressure?
19. Expand TLC.
20. Expand GLC
21. Expand HPLC.
22. Expand AGE.
23. Expand PAGE.
24. SDS-PAGE.
25. Define Autoradiography.
26. What is marker enzymes?
27. Define population.

28. Define sample.
29. Define mean.
30. Define mode.
31. Define median.
32. What is the purpose of negative staining?
33. Which microscope is used to get three dimensional picture of specimen?
34. Which part of scanning electron microscope collects the radiated back secondary electron?
35. Where do we obtained the magnified image of the specimen in SEM?
36. Which centrifugation is used to separate certain organelles from cell?
37. Name the polysaccharide used as media for density gradient.
38. Name the technique used for purifying liquids containing suspension.
39. Which technique is used for studying synthesis of molecules and tracing metabolic pathway.
40. In which type of chromatography, the stationary phase is held in a narrow tube and the mobile phase is forced through it under pressure?
41. Which type of chromatography involves in separation of substances in a mixture over a 0.2mm thick layer of an adsorbent?
42. What is a chromophore?
43. What is the wavelength range for UV spectrum of light?
44. Who discovered the mass spectrometer?
45. In which state of matter mass spectroscopy is being performed?
46. Write the most common type of gel used for DNA separation.
47. Which is the technique suited for the separation of large DNA fragments.
48. What is the role of SDS in SDS-PAGE?
49. Write the term used for a circle divided into sectors proportional to the frequency of items.
50. Which type of electron microscope requires heavy metal staining?

B. Long questions (8 marks each)

1. Describe about principles of light Microscopy.
2. Describe about fluroscence microscopy.
3. What are radioisotopes? Describe their role in biological research.
4. Discuss about flow cytometry.
5. Describe about transmission electron microscopy.
6. Describe about scanning electron microscopy.
7. Describe about different methods of centrifugation.
8. Describe about sucrose gradient centrifugation.
9. What is centrifugation? Describe about analytical centrifugation.
10. Describe about autoradiography.

11. Write about principles of spectrophotometry and it's application in biological research.
12. Describe about paper chromatography.
13. Discuss about molecular sieve chromatography.
14. Describe about column chromatography.
15. Discuss about mass spectrometry.
16. Give an account of X-ray diffraction.
17. What is electrophoresis.Describe different types electrophoresis.
18. Describe about role of statistics in biology.
19. Describe about different methods to represent data.
20. Describe about measure of central tendency.

DSE 2 (Natural Resource Management)

A. Short questions (1 mark each)

01. What is natural resources?

02. What is Red data book?

03. What is the definition of water?

04. What is the meaning of soil degradation?

05. What is biodiversity ?

06. What is the definition on soil?

07. What is bioprospecting ?

08. What is the full form of IPR?

09. What is the full form of CBD?

10. What is forest?

11. What is Canopy?

12. What is energy?

13. What is renewable energy?

14. What is non-renewable energy?

15. Expand EIA

16. Expand GIS

17. What is ecological foot print?

18. What is carbon foot print?

19. What is sustainable utilization?

20. What is silviculture?

21. Which is known as pastoral land?

22. What is watershed?

23. What are the threats to biodiversity?

24. Give an example of a mojar forest product.

25. Give an examples of a minor forest product.

26. How many types of biodiversity is found?

27. What is hotspot area?

28. What are endangerad species?

29. Define horticulture.

30. What is an aquifer .

31. What is groundwater .

32. What is an estuarine .

33. What are wetlands .

34. What do you mean by endemism .

35. What is the contemporary practice in resource management .

36. When the biodiversity plan was formulated .

37. What is the meaning of resource .

38. What is resource accounting .

39. What is the definition of waste .

40. Write one of the hotspot region of odisha .

41. What do you meant by depletion .

42. Why biodiversity is important to ecosystem .

43. Which factor is very much responsible of soil degradation .

44. Which are known as biological resources .

45. Name 2 renewable sources of energy .

46. Name 2 non- renewable sources of energy .

47. Which is an agricultural field .

48. Define lake .

49. Write the name of a National park of Odisha.

50. Write the name any bird sanctuary of India.

B. Long Questions (8 marks each)

1. What are natural resources ? Describe different types of natural resources.

2. What is sustainability ? Describe the sustainable utilization of natural resources.

3. Describe in details the concept and approaches of natual resources.

4. What is land ? Describe in dtails the utilization of land in Agriculture.

5. Describe the utilization of land in silviculture.

6. What is soil ? Describe the process of soil degradation.

7. Describe soil degradation process and its management.

8. Describe different watersheds and how these are important to flora and fauna.

9. Describe the threats and management of watersheds.

10. What is biodiversity? Describe the types and significance biodiversity.

11. Describe the threats to biodiversity.

12. Describe the management strategis of biodiversity.

13. What is forest cover and describe the significance of it with special reference to India.

14. Describe in details the major and minor forest products.

15. What is energy? Describe the renewable and non-renewable sources of energy.

16. Describe ecological fort prints with special emphasis on carbon foot print.

17. Describe the management of forest resources.

18. Explain some of the contemporary practices in resource management ?

19. What is waste management ? Describe national and international efforts of waste

management.

20. Describe how can we conserve the national resources.

SEMESTER- VI

Core13 (Plant Metabolism)

A. Short questions (1 mark each)

1. What is metabolism?
2. What is anabolism?
3. What is catabolism?
4. What is allosteric enzyme?
5. What is isozyme?
6. What are antenna molecules?
7. What is FAD?
8. How many photosynthetic pigments are found in plants?
9. What is the molecular formula of chlorophyll-a?
10. What in the molecular formula of chlorophyll-b?
11. Photosynthesis occur in which organelle of a cell?
12. How many ATP released from a single NADPH molecule?
13. Molecular O_2 is evolved in which pigment system?
14. Cyclic photophosphorylation in found in which pigment system
15. How many molecules of ATP is synthesized in cyclic photophosphorylation
16. How many molecules of ATP are synthesized in non-cyclic photophosphorylation
17. Which cycle is known as photosynthetic carbon reduction pathway?
18. What is photorespiration?
19. What is dark reaction?

20. What are chemo autotrophs?

21. What is Q10?

22. What is an enzyme?

23. What is ribozyme?

24. Write some names of nitrogen fixing symbionts?

25. Which bacteria are responsible for biological nitrogen fixation

26. What do you mean by symbiosis?

27. What is nitrogenase complex?

28. What is transamination ?

29. What is the full from of ATP?

30. What is anaplerotic reaction ?

31. Which is the 1st carbon acceptor in CAM plants?

32. Which in the first CO_2 acceptor in C4 plants?

33. Who first used the from lipid ?

34. Write the general formula of saturated fatty acids

35. Write the general formula of unsaturated fatty acid

36. By which system, the systematic nomenclature of fatty acids in based?

37. In which category the plant fats are included?

38. What is emulsification?

39. Give an example of a compound lipid

40. What are derived lipids?

41. What are steroids?

42. In which way plant fats are differ from animal fats?

43. What is the formula of ATP synthase?

44. What is ammonia assimilation?

45. In which part of the plants, fats are found concentrated?

46. Is free nitrogen responsible for nitrogen cycle?

47. Why ATP in regenerated in living cell?

48. What do you mean by kink formation?

49. What is lection?

50. Give some examples of photosyrthetic bacteria

B. Long questions (8 marks each)

1. Describe anabolic and catabolic pathways of metabolism.

2. Describe role of regulatary enzymes with suitable examples .

3. Describe the mechanism of signal transduction found in plants

4. Describe oxidative phosphorylation in detail .

5. Describe the process of Glycolysis.

6. Discuss Kreb cycle.

7. Describe election transport system in detail.

8. Write a note on biological nitrogen fixation.

9. Describe process of mineral nitrogen assimilation.

10. Discuss the process of root nodule formation .

11. Describe the structure and mechanism of nitrogense action .

12. Describe beta-oxidation of lipids .

13. What are lipids? Describe their properties.

14. Discuss biosynthesis of fats.

15. Differentiate saturated and unsaturated fatty acids.

16. What is gluco-neogenesis? Describe its role in mobilization of lipids during seed germination .

17. Discuss in the synthesis and breakdown of triglycerides

18. Describe the factors affecting respiration

19. Describe the mechanism of ATP synthesis in plants

20. Differentiate between oxidative and photo phosphorylation

Core-14 (Plant Biotechnology)

A. Short questions (1 mark each)

1. Expand YAC.
2. Expand BAC.
3. Expand PAC.
4. Expand MAC.
5. Expand GUS.
6. Expand GFP.
7. What is cryporeservation.
8. Expand PCR.
9. What is Cybrid?
10. What is micro propagation?
11. What is Transformation?
12. What is the letter “c” denotes in cDNA Library?
13. Expand ‘Bt’ in Bt cotton.
14. What is somatic hybridization?
15. Expand PEG.
16. Name the suitable host used in generic engineering to introduce DNA fragment.
17. What is other name of vectors?
18. Which enzyme is known as molecular scissor?
19. Which enzyme is used to join donor fragments and vector fragments?
20. What is totipotency?
21. Name the extra chromosomal circular DNA found in the Ecoil.
22. Which year restriction endonucleases are discovered?
23. Which organism is used for citric acid production?
24. Define Differentiation.
25. Define Redifferentiation
26. Define Dedifferentiation
27. What is callus?
28. What is embryogenesis?
29. What is organogenesis?
30. What is used as gelling agent in tissue culture?

31. What is androgenesis?
32. Who invented PCR technology?
33. Who is known as father of tissue culture?
34. Which pair of hormone is required for callus Differentiation?
35. Expand HAC.
36. Name the medium which is composed of chemically defined compound.
37. Name the chemical which is widely used for protoplast fusion.
38. Name the filter paper used in northern blotting.
39. What is the use of southern blotting?
40. What is the use of northern blotting?
41. Who invented southern blotting?
42. Name the heat stable DNA polymerase used in PCR.
43. Write the characteristic feature of Golden rice.
44. Write the characteristic feature of Flvr savr tomato.
45. What is bioremediation.
46. What is Humulin.
47. What is edible vaccine.
48. Name a herbicide resistant genetically modified plant.
49. Which metal is used as micro-carrier in particle gun bombardment method?
50. Name the chemical released from wound of dicot plant that induces vir genes of Agrobacterium tumefaciens.

B. Long questions (8 marks each)

1. Describe about aspetic tissue culture techniques.
2. Describe about protoplast isolation & culture.
3. Describe about applications of tissue culture.
4. Describe different type, biological role and application of restriction endonuclease.
5. Describe about different prokaryotic cloning vector.
6. Describe about different eukaryotic cloning vector.
7. Describe about PCR mediated gene cloning.
8. Describe about methods of Recombinant DNA
9. Describe about construction of cDNA libraries.
10. Describe about Agrobacterium mediated gene transfer.
11. Describe about different methods of direct gene transfer.
12. Describe about genetically modified pest resistance plant with special reference to Bt cotton.
13. escribe about the transgenic crops with improved quality traits with special reference Golden rice.
14. Describe about transformation & selection of recombinant clones.
15. Describe about role of transgenics in bioremediation.
16. Describe about production of industrial enzymes through genetic engineering.

17. Describe about colony hybridization.
18. Describe about selection of transgenics through selective marker gene and reporter gene
19. Describe about biosafety concerns with respect to GMO.
20. Describe about transgenic crops.

DSE-3 (Horticulture Practices & post-harvest technology)

A. Short questions (1 mark each)

1. What is horticulture?
2. What is floriculture?
3. What is olericulture?
4. What is pomology?
5. Name a ornamental climber.
6. Name a ornamental flowering tree.
7. Name a ornamental annual plant.
8. Name a ornamental perrinial plant.
9. Expand PGR.
10. What is drip irrigation?
11. What is surface irrigation?
12. What is furrow irrigation?
13. What is border irrigation?
14. What is hydroponic?
15. Name an ancient mughal garden.
16. Expand IPM.
17. Expand IPR.
18. What is plant quarantine?
19. What is micro-propagation?
20. What is germplasm?
21. What is botanical name of Rose?
22. What is the family of marigold?
23. What is the botanical name of gulmohar?
24. Name a hybrid variety of Pumpkin.
25. What is botanical name of Indian Laburnum?
26. What is the family of gladiolus?
27. What is the botanical name of fishtail?
28. Give any characteristics feature of orchid.
29. What is bonsai?
30. What is the difference between insect & pest?

31. Name a hybrid variety of Banana.
32. Name a hybrid variety of Mango.
33. What is Bio-fertilizer?
34. Name an aerobic nitrogen fixing bacteria.
35. Name an anaerobic nitrogen fixing bacteria.
36. What is biopesticides?
37. Name a biopesticides.
38. Which is the casual organism for crown gall disease in apple?
39. Which is the causal agent for wart disease of potato?
40. Which is the causal agent of dowry mildew disease?
41. Which disease of plant is known as ring disease?
42. Name the disease of plant in which large yellow spot appears on the leaves.
43. What is the causal agent for bunchy top of banana?
44. In which disease of plant stem rot at soil line with brown to red .
45. Where is the native place of mango?
46. Where is the native place of banana?
47. What is selective herbicide?
48. Which PGR breaks dormancy of potato tuber?
49. Which is known as fruit ripening hormone?
50. Auxin is synthesized in which part of the plant?

B. Long questions (8 marks each)

1. Describe about scope, importance & branches of horticulture.
2. Describe about role of horticulture in rural economy and employment generation.
3. Describe about urban horticulture & ecotourism.
4. Describe about salient features of orchid.
5. Describe about ornamental trees.
6. Describe about characteristics features & horticultural importance of banana.
7. Describe about horticultural techniques i.e. application of manure , fertilizer, nutrients & PGRS.
8. Describe about weed controls application of bio-pesticides.
9. Describe about different irrigation methods.
10. Describe about different propagation method.
11. Describe about planning & design of park & avenue.
12. Describe about floriculture.
13. Describe about post-harvest technology of horticultural crops.
14. Describe about disease control & management in horticultural crops.
15. Describe about quarantine practices of horticultural crops.
16. Describe about IPM strategies for horticultural crops.

17. Describe about role of micro-propagation & tissue culture in horticultural plant conservation.
18. Describe about IPR issues related to horticultural crops.
19. Describe different methods to minimize losses during storage & transportation of vegetables.
20. Describe about documentation & conservation of germplasm.