QUESTION BANK
DEPARTMENT OF BOTANY

SEMESTER- I

Core 1 (Microbiology and Phycology)

A. Fill in the blanks (1 mark each)

1. The study of Algae is known as_____.
2. The reserve food material in chlorophyceae is _____.
3. The alga _____ is an example of heterotrichous habit.
4. Water blooms are generally formed by_____.
5. The reserve food floridean starch is found in the members of class_____.
6. The principal pigment of Phaeophyceae importing distinctive brown colour is _____.
7. _____is the reserve food material in cyanophyceae.
8. Pyrenoids are meant for _____ synthesis in various algae.
9. Fusion between gametes of unequal sizes is called_____.
10. Cup shaped chloroplast is found in _____.
11. Coenobium is found in _____.
12. The species of chlamydomons which forms the red snow is _____.
13. _____ genus has the characteristics of cap cells.
14. Multicillated zoospore is found in _____.
15. In coleochaete the chloroplasts are _____ shape.
16. _____type of thallus is found in Ectocarpus.
17. Agar-agar is mainly obtained from _____.
18. The algae _____ is used in study of photosynthesis.
19. _____ is known as Pond scum.
20. _____ contains alginic acid.
21. The cell wall of algae is made up of _____.
22. _____ type of life cycle is found in Ectocapus.
23. _____ type of life cycle is found in Fucus.
24. _____ type of life cycle is found in Polysiphonia.
25. Zygotic meiosis is characteristics of _____.
26. _____ is known as father of modern Indian Algology.
27. The asexual, motile, flagellated reproductive body of algae is known as_____.
28. _____ is known as 'Jewels of the plant world'.
29. The genetic material of TMV is_____ .
30. Blue green algae fix _____ directly from air to enhance fertility of soil.
31. Cholera is caused by_____.
32. Flagella spread over entire surface of bacteria cell is called _____ flagella.
33. Small circular DNA molecules capable of replicating and containing genes that are useful but not necessary to the bacterium are called_____.

34. NAG stands for_____.
35. Cube like arrangement of spherical bacteria is referred as_____.
36. Spiral bacterium with flexible body is known as_____.
37. NAM stands for_____.
38. Organisms that obtain energy from the oxidation of either organic or inorganic compounds are called_____.
39. _____is the polysaccharide layer that lies outside the cell wall of bacteria and is not easily removed.
40. Hair like projection involved in bacterial mating is called_____.
41. _____are the viruses which infect bacteria.
42. Phages that show lysogenic cycle are called_____.
43. _____ discovered virus.
44. In a virus infection on bacterial cell, phage 'ghost' represents_____.
45. The genetic material of QX174 is _____.
46. Organisms which parasitize only a specific host are _____.
47. Bacteriophage releases lysozyme at _____ phase.
48. The protein sub unit of TMV is called_____.
49. The process of reverse transcription was discovered by_____.
50. The bacteria used in gene transfer is _____

B. Very short type question (1.5 marks each)

1. What is prophage?
2. What is the genetic material of HIV?
3. What is the genetic material of TMV?
4. What is the genetic material of retrovirus?
5. What is the genetic material of Poliovirus?
6. What is reverse transcription?
7. Who discovered Bacteria?
8. Name the nucleic acid present in plant viruses?
9. What is Transduction?
10. What is bacterial transformation?
11. What is bacterial conjugation?
12. Who discovered bacterial transformation?
13. Who discovered bacterial conjugation?
14. Who discovered Transduction?
15. Which bacteria is responsible for curd formation.
16. Which bacteria is used for acetic acid formation.
17. Name an aerobic nitrogen fixing bacteria.
18. Name a denitrifying bacteria.
19. Name a nitrifying bacteria.
20. What is facultative parasites?
21. Which algae are responsible for 'Red Snow'?
22. Name the parasitic alga that causes 'Red Rust' in tea & coffee.

23. What is isogamy?
24. What is anisogamy?
25. What is oogamy?
26. What is zoopore?
27. What is aplanospore?
28. Which algae are known as kelps?
29. Which algae are source of Iodine?
30. What is the reserve food material of Brown algae?
31. Name a coenocytic algae.
32. What is hypnospore?
33. Which algae are source of algin?
34. Name the site for nitrogen fixation of Nostoc.
35. What is the photoreceptive organ of Chlamydomonas?
36. Which algae contains cup shaped chloroplast?
37. Which algae has characteristics of palmella stage?
38. What is zygospore?
39. Which type of life cycle found in chlamydomonas?
40. Which algae has reticulate chloroplast?
41. Which algae has characteristics feature of synzoospore or compound zoospore?
42. Which algae has characteristics feature of Gongrosira stage.
43. Name the algae having characteristics feature of unilocular & plurilocular sporangia.
44. What is common name of fucus?
45. Which algae are source of agar-agar?
46. Which are most primitive group of Algae?
47. Which type of life cycle found in Polysiphonia?
48. What is the reserve food material of cyanophyta?
49. Which is the most advanced group of algae?
50. Name the term used for male gametes of Polysiphonia.

C. Short questions (2.5 marks each)

1. Archaebacteria.
2. Mycoplasma.
3. Facultative parasitic bacteria.
4. Facultative saprophytic bacteria.
5. Cell wall of algae.
6. Binary fission.
7. Sphaeroplast.
8. Heterocyst.
9. Conjugation.
10. Transformation.
11. Transduction.
12. Nitrogen fixing bacteria.
13. Isogamy.

14. Oogamy.
15. Anisogamy.
16. M.O.P lyengar.
17. F.E Fritsch.
18. Prion.
19. Viroid.
20. Bio fertilizer.
21. Agar-agar.
22. Cyanobacteria
23. Coenobium.
24. Zoospore.
25. Aplanospore.
26. Hypnopore.
27. Palmella Stage.
28. Prophage
29. Gongrosira stage.
30. Coenocytic algae.
31. Pyrenoid.
32. Haplontic life cycle.
33. Spermatium.
34. TMV
35. Lytic life cycle.
36. Lysogenic life cycle.
37. Methanogenic bacteria.
38. Endospore.
39. Bacteriophage.
40. Gram +ve bacteria.
41. Pigments of Rhodophyta.
42. Pigments of Phaeophyta.
43. Diplobiontic life cycle.
44. Algin
45. Water bloom
46. Fermentation
47. Role of Algae in Biotechnology.
48. Transduction.
49. Globule.
50. Nucule.

D. Long questions (8 marks each)

1. Describe about microbial nutrition.
2. Describe about microbial growth and metabolism.
3. Describe about Baltimore classification of virus.
4. Describe about structure and life cycle of T-phage.

5. Describe about structure of bacteria.
6. Describe about vegetative & asexual reproduction of bacteria.
7. Describe about genetic recombination in bacteria.
8. Describe about economic importance of bacteria.
9. Describe about morphology & life cycle of Nostoc.
10. Describe about range of thallus structure in algae.
11. Describe about methods of reproduction in Algae.
12. Describe about Fritsch classification.
13. Describe about morphology & life cycle of Chlamydomonas.
14. Describe about morphology & life cycle of Oedogonium.
15. Describe about morphology & life cycle of Volvox.
16. Describe about different type of life cycles found in Algae.
17. Describe about morphology & life cycle of Ectocarpus.
18. Describe about morphology & life cycle of Vaucheria.
19. Describe about morphology & life cycle of Polysiphonia.
20. Give an account of the status of microorganism in the living world.

Core 2 (Biomolecules and Cell biology)

A. Fill in the blanks (1 mark each)

1. Water molecule is electrically ----------

2. The distance of a covalent bond is _____

3. A buffer solution has a definite _____ value.

4. Molecules of small size, low molecular weight but high solubility are known as _____.

5 . Crossing over occurs in_____ stage of meiosis.

6 . Carbohyarates are hydrates of _____

7. _____ are the building block materials for the complex carbohydrates

8. _____ is a storage polysaccharide of animals and fungi

9 . In nature _____ are the stored form of energy

10 . The term lipid was coined by_____

11. _____ are hydrophobic in nature

12. _____ are of biological origin which speed up various chemical reactions

13 . Enzymes are _____ in nature

14 . Emil fisher proposed _____ model for explaining enzyme action

15 . Enzymes are mostly _____

16 . Enzymes are the polymers of _____

17 . Enzymes occur in the cell in the form of _____

18 . An apo enzyme is a _____

19 . NADP is a _____
20 . _____ is a structural polysaccharide
21 . Most of the lipids are esters of _____
22 . Insulin is a _____
23 . Glycerol, a component of _____ is used in manufacture of food
24. _____ are found in all living organisms
25. _____ are the bearers of hereditary characters .
26 . A nucleoside is _____
27. Left handed DNA is known as _____
28. Pyrimidines present in RNA are _____
29. DNA was first discovered by _____
30. The two strands of DNA are _____and _____
31. _____ was awarded Nobel prize for synthesis of RNA
32. Middle lamella is made of _____
33. Cytoplasmic continuity is due to _____
34. _____ is absent in prokaryotes
35. _____ is a major secretary organelle of the cell
36. _____ is known as physical basis of life
37. _____ are known as power houses of the cell .
38 . Centrosome splits into two _____
39. Ribosomes are produced in _____
40. _____ cell wall is near to cell membrane
41. Microtubules are absent in _____
42. Nucleic acids were discovered by _____
43. Nucleus was discovered by _____
44. _____discovered plastids
45. _____ are suicide bag of cell
46. The cells divide by _____ in asexual reproduction
47. The longest phase of inter phase is _____
48. The term meiosis was introduced by _____
49. The term mitosis was coined by _____
50 . Mitosis is best observed in _____

B. Very short type questions (1.5 marks each)

1 .What is biomolecule ?
2 . What is chemical bond ?
3 . What is buffer solution ?
4 . What is Ionic bond ?
5 . What is exergonic reaction?
6 . What is endergonic reaction ?
7 . What is free energy?

8 . What is redox reaction?
9 . What is the pH value of rain water ?
10 . What is enzyme ?
11 . What is apoenzyme ?
12 . What is coenzyme ?
13 . What is disaccharide ?
14 . What is polysaccharide ?
15 . What are active sites ?
16 . What are conjugate enzymes ?
17 . What is peptide bond ?
18 . What is holoenzyme ?
19 . What is fatty acid ?
20 What is monoaccharide ?
21 . What is primary protein ?
22 . What is iso electric point ?
23 . What is entropy ?
24 . Who discovered nucleic acid ?
25 .What is first law of thermodynamics ?
26 . Write Michelis-Menten's equation ?
27 . What is cofactor ?
28 . What is a cell ?
29 . Who discovered cell ?
30 . Who discovered cell theory ?
31 . Who proposed the term nucleus ?
32 . Who discovered fluid mosaic model ?
33 . Who coined the term ribosome ?
34 . What is eukaryotic cell?
35 . What is prokaryotic cell ?
36 . What is oligosaccharide?
37 . Who discovered nucleolus ?
38 . What is B- DNA ?
39 . What is nucleoside ?
40 . What is mRNA ?
41 . What is passive transport ?
42 . What is chromatin ?
43 . Who discovered Lysosome ?
44 . What is nuclear pore complex ?
45 . What is cell cycle ?
46 . What is chiasmata?
47 . What is synapsis ?
48 . What is interphase ?
49 . Who discovered ribosome ?

50 . Who coined the term mitosis ?

C. Short questions (2.5 marks)

1 . What are carbohydrates ? Give suitable example ?
2 . Write short note on fatty acid.
3 . Name two fibrous proteins.
4 . What is secondary protein ? Give an example .
5 . What are lipids ? Give an example .
6 . What do you meant by enthalpy and entropy.
7 . Name the process by which somatic cells divide .
8 . Write first law and second law of thermodynamics
9 . What are endergonic and exergonic reactions ?
10 . Write the full form of ATP and ADP.
11 . Give two properties of water molecule .
12 . What is melting point and boiling point?
13 . Give pH value of rain water and tap water.
14 . write two significance of chemical bonds .
15 . What is purine and pyrimidine?
16 . What is nucleoside and nucleotide ?
17 . Give two example of secondary protein ?
18 . Write two functions of DNA.
19 . Write is two functions of RNA.
20 . What is two functions of fatty acid ?
21 . Which two organelles are referred as 'a cell within a cell'?
22 . Name three major components of primary cell wall .
23 . Name three cell organelles enveloped by a single unit membrane .
24 . Explain why cell is called the basic unit of life .
25 . Explain the roles of SER and RER .
26 . Write the two function of ribosome.
27 . Describe crossing over.
28 . White two functions of cell membrane .
29 . Who proposed the term golgi complex and in which year?
30 . What is eukaryotic and prokaryotic cell.
31 . Name two contractile protein .
32 . Who proposed mitochondria and in which year ?
33 . Who studied the structure of proteins and give one example of protein .
34 . When does the reduction in chromosome number occurs during meiosis ?
35 . What is simple and compound lipid ?
36 . Give two example of simple lipid ?
37 . What is steroid and cholesterol ?

38 . Write two properties of triglyceride.
39 . Who proposed the term protein and in which year ?
40 . What is primary structure and secondary structure of protein .
41 . Who proposed the term nucleic acid and in which year ?
42 . What is DNA and RNA .
43 . Write the two types of Nucleic acid .
44 . What is B-DNA and Z-DNA .
45 . What is reducing and non reducing sugar ?
46 . Write the two chemical properties of triglyceride .
47 . Write the full form of AMP and ATP .
48 . What is holo enzyme and apoenzyme ?
49 . What is cell and cell theory ?
50 . Describe active and passive transport.

D. Long questions (8 marks each)

1 . Describe the structure and physical properties of water .
2 . Describe different types of covalent bonds .
3 . What is carbohydrate? Classify the carbohydrates with suitable examples .
4 . What is protein? Describe the different structures of proteins
5 . Describe the structure and function of ATP molecule. .
6 . Explain the principle of conservation of energy in nonliving and living systems .
7 . Describe the molecular mechanism of enzyme action .
8 . Give an account of nomenclature and classification of enzymes
9. Describe different factor that affect the enzyme activity.
10. Describe the Watson and Crick model of DNA.
11. Give a comparative account of prokaryotic and eukaryotic cell.
12.Describe the structural organization of the cell membrane.
13.Give an illustrated account of structure of nucleus.
14. Describe the structure and function of mitochondria.
15.Descrbe the structure and function of chloroplast .
16.Give an account of structure ad function of ribosome.
17. Describe the structure and function of golgi complex.
18. Describe the different stages of mitosis.
19.Describe the different stages of meiosis-1.
20. What is cell cycle ? Describe eukaryotic cell cycle.

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SEMESTER- II
Core 3 (Mycology and Phytopathology)

A. Fill in the blanks (1 mark each)

1 . The word fungus is derived from the Latin word --------- .
2 . The study of fungus is known as ---------- .
3 . The nutrition in fungi is ---------- .
4 . Fungi lack ------- .
5 . The cell wall of the fungi is made up of -------- .
6 . Father of modern mycology is --------- .
7 . In Saccharomyces , --------- is the most common method of vegetative reproduction .
8 . Sexual reproduction in yeast takes place by --------- .
9 . Sometimes in yeast the conjugation takes place between a parent cell and a bud . It is called---------- .
10 . Aspergillus is also known as -------- .
11 . The fruit body of penicillin is called ---------- .
12 . The spores in the members of zygomycetes are -------- .
13 . Rhizopus multiplies by the formation of ---------- .
14 . The rusts are serious diseases of our economic plants. The disease is caused by the fungus---------- .
15 . Black stem rust of wheat is caused by ---------- .
16 .Number of ascopores formed in Saccharomyces cerevisiae is----- .
17 . Basidiocarps are the fruit bodies of ---------- .
18 . The edible mushroom is --------- .
19 . The secondary dikaryotic mycelium formed in the --------- phase of Agaricus .
20 . Plasmogamy in Albugo candida takes place by ---------- .
21 . Albugo candida absorbs its nourishment from the host cells through ----
22 . In Phytophthera infectans , the asexual reproductive bodies behave as -------- .
23 . The algal component of a lichen thallus is known as -------- .
24 . The lichens consisting of a member of basidiomycetes are known as –------- .
25. Yeast like budding of Oidia in Mucor/Rhizopus is called------- .
26 . In majority of lichens , the fungal component is a member of class --- .
27 . The common mode of reproduction in Rhizopus is by ------ .
28 . The name of the lichen which produces antibiotics is ------- .
29 . Root rot of Sweet Potato is caused by --------- .
30 . Lichens are bioindicators of ---------- .
31 . Fungus used for the fermentation of cheese is------ .

32 . The study of plant disease is known as --------- .
33 . Father of Indian plant pathology is --------- .
34 . Phytophthora infectans causes the disease known as ---------- .
35 . The name of the disease caused by Albugo Candida is ------ .
36 . The name of the causal organism of early blight of potato is -------- .
37 .In ---------- mycorrhiza, the tips of fungal hyphae occur inside cortical cells.
38 . Gibberellin are produced by the fungus --------- .
39 . The yeasts secret the enzyme complex is called as-------- .
40 . The smuts of crop plants are caused by ------- .
41 . The chemicals used for killing fungal pathogens are called -------- .
42 . Litmus dye is obtained from lichen --------- .
43 . The first colonizers on rocks in mountains are ---------.
44 . Lichens are composite thollophytes containing an alga and a ------- .
45 . The cultures of fungi are needed for ---------- studies .
46 . Mycorrhiza is an association between the -------- and a fungus.
47 . --------- types of mycorrhiza commonly occurs.
48. Fungi growing on dungs are called -------- .
49 .Thread like filaments which form the plant body of fungi are ------ .
50 . Which fungi is used in citric acid production----- .

B. very short questions (1.5 marks each)

1 . What is true fungi ?
2 . Which type of nutrition is found in fungi ?
3 . Which fungi is known as laboratory weed ?
4 . What is budding ?
5 . What is stolon ?
6 . Write any one character of Ascomycetes .
7 . What is parasexuality ?
8 . What the fruiting bodies ?
9 . Write any one character of Basidiomycetes ?
10 . What is an ascus ?
11 . what is spermatization ?
12 . Which type of tissue is found in Fungi?
13 .Name the group of fungi with septate mycelium and lack of sexual reproduction ?
14 . Give one Economic importance of yeast .
15 . What is Eurotium ?
16 . What is psedoparenchyma?
17 . What is prosenchyma ?
18 . What is sporophore ?
19 . Write the tern sclerotium ?
20 . Who discovered penicillin ?
21 .Give one economic importance of penicillium .

22. 'Ergot' is obtained from which fungi?
23 . What is rust of disease ?
24 . Which is causal organism for Bengal famine 1943?
25 . Genus Penicillium belongs to which class ?
26 . What is facultative parasite?
27 . What is Uredospore?
28 . What is teleutospore ?
29 . What is obligate parasite?
30 . What is obligate saprophytes ?
31 . What is reserve food material of fungi?
32 . Give one example of fruticose lichen.
33 . What is mycorrhiza ?
34 . What is Ectomycorrhiza ?
35 . What is Endomycorrhiza?
36 . Name one edible mushroom .
37 . What is antibiotics ?
38 . What is chlorosis ?
39 . Which fungi is known as bread mould ?
40 . What is foliose lichen?
41 . What is mycobiont ?
42 . What is facultative saprophytes?
43 . What is crustose lichen ?
44 . What is fructicose lichen?
45 . What is necrosis ?
46 . Write the name of the causal organism for early blight of potato .
47 . Write any plant character of fungi.
48 . The name of the disease caused by Albugo Candida .
49.Which division of Fungi is known club Fungi.
50.Name the group of organism which are source of alfatoxin.

C. Short questions (2.5 marks each)

1 . Write any two characters of phycomycetes .
2 . Write any three characters of Basidiomycetes .
3 . Write any two important characters of Fungi .
4 . Write the two vegetative characters of Rhizopus .
5 . Why Rhizopus is called as bread mould ?
6 . Write two important characters of asexual reproduction in Rhizopus ?
7 . Who first used the term heterothallism and in which year ?
8 . Write characteristic features of zygomycota .?
9 . What do you mean by heterothallism ?
10 . Write about mycorrhiza. .

11 . What do you meant by zygospore ?
12 . What do you mean by heterokaryosis and parasexuality.
13 . Who first described yeast cell and in which year .
14 . Write two vegetative characters of yeast cell .
15 . Write two vegetative features of Penicillium .
16 . Write two important significance of Neurospora .
17 . What do you mean by autoecious and heterocious?
18 . Write two alternate host of Puccinia .
19 . Wtat do you mean by Teleutospore and Uredospore ?
20 . Write two important characters of slime mold. .
21 Write the fruiting bodies in slime molds .
22 . Write the two important vegetative characters of phytophthora .
23 . Write the division and Family of Albugo .
24 . Why oomycota are not considered as true fungi ?
25 . What do you mean by oospores in Albugo ?
26 . What do you meant by periplasm and ooplasm ?
27 . Write the two important characters of lichen ?
28 . What is crustose lichen and Foliose lichen ?
29 . Give two examples of Foliose lichen ?
30 . Give three examples of fruticose lichen ?
31 . Write two Economics important of lichen ?
32 . What Ectomycorrhiza and endomycorrhiza ?
33 . Who discovered penicillin and in which year ?
34 . What is Alfatoxin and ochratoxin ?
35 . Describe about nutrition in Fungi.
36 . Describe vegetative structure of Agaricus.
37 . What do you mean by loose smut and covered smut ?
38 . Write the kingdom and order of Agaricus ?
39 . Write about cell wall of Fungi?
40 . Write the plant characters of fungi ?
41 . What do you mean by photobiont and mycobiont ?
42 . What do you mean by Isidia and sordaria ?
43 . Write the two ecological significance of lichen ?
44 . What do you mean by symbiosis ?
45 . Write the two medicinal uses of lichen ?
46 . What do you mean by plant pathology and pathogens ?
47 . What do you mean by Necrosis and Chlorosis ?
48 . Write about different species of Saccharomyces ?
49 . Write the two control measures of early blight .
50 . Write two symptoms of early blight of patato.

D. Long questions (8 marks each)

1 . Give an account of the modern classification of fungi ?
2 . Discuss the sexual reproduction in Rhizopus ans its significance ?
3 . Give an account of sexual reproduction in Aspergillus ?
4 . Give an account of life cycle of Penicillium..
5 . Give an account of the life cycles in saccharomyces .
6 . Give an account of taxonomic status of slime molds .
7 . Discuss the general features of slime molds .
8 . Describe the life cycle of phytophthora .
9 . Describe the life cycle of Albugo .
10 . Describe the life history of Agaricus .
11 . Discuss the life cycle of Puccinia.
12 . Give a bnief account of the general characters of oomycota .
13 . Give an account of reproduction in lichens .
14 . Describe the economic importance of lichens .
15 . Describe the morphology and structure of lichens .
16 . Give an account of role of fungi in food industries .
17 . Discuss the role of fungi in biotechnology .
18 . What do you mean by disease cycle ? Discuss the various stages of disease cycle .
19 . Discuss the early blight of potato disease and its methods of control .
20 . Give an account of degeneration of sex in fungi.

Core 4 (Archegoniate)

A. Fill in the blanks (1 mark each)

1. The number of ventral canal cell in bryophytes is always _____
2. In liverworts, the rhizoids are _____ cellular
3. Bryophytes are classified into _____ major classes.
4. In Bryophyte, calyptra develops from _____.
5. In all bryophytes, water is _____ for fertilization.
6. Bryophytes in general are known as _____ of plant kingdom.
7. Bryophytes don't possess _____ in their gametophytic plant body.
8. In bryophytes, spore mother cell are _____ in nature.
9. Members of anthocerotopsida are commonly known as _____.
10. The sperms of bryophytes are_____.
11. In Riccia, antherozoids are _____.
12. In Marchantia, the endothecium ultimately gives rise to _____.
13. The calyptra, protecting the sporogonium of Riccia is _____ in nature.
14. Anthoceros is commonly known as _____.
15. The sporophyte of anthoceros grows indefinitely due to the presence of _____.
16. The pseudoelaters of Anthoceros are _____

17. In Riccia crystallina, the ventral scales are _____
18. Elaters are not found in _____.
19. The antherozoids of Riccia are _____.
20. In Riccia the anthenidium is _____ shaped.
21. Calyptra in Marchantia is found in _____.
22. The stalk of gemmae of marchantia is _____.
23. Gemma cup is found in _____.
24. In Marchantia the chloroplast is _____.
25. Formation of elaters is characteristic of _____.
26. In Marchantia asexual reproduction is happened by_____.
27. Elaters are _____ in nature.
28. In Funaria spores germinate to form _____.
29. In Funaria, the reducation division takes place in _____.
30. The conducting strand in Funaria is called_____.
31. Spore mother cell in funaria is _____ in nature.
32. All members of psilophytopsida are _____.
33. True roots are _____ in psilotopsida.
34. In crustation fossils are suitable for the study of _____.
35. The process of preservation of living beings or their parts is known as_____.
36. Rhynia was discovered by _____.
37. A Devonian vascular plant is named as _____.
38. Rhynia major is found in _____.
39. Rhynia is a _____ pteridophyte.
40. Psilotum belongs to the order of _____.
41. Psilotum consists of stem and _____.
42. Sperms in Selaginella are _____.
43. Heterospory means presence of _____ type of spores.
44. Stem in Selaginella is _____.
45. In Selaginella the male gametes are _____.
46. In Pinus pollination is _____ .
47. Pinus is _____ plant.
48. The coralloid root of Cycas _____ nature.
49. The archegonium of Cycas lacks _____.
50. In plant kingdom the largest ovules occur in _____.

B. Very short type questions (1.5 marks each)

1. Give the names of spore wall layers found in Riccia ?.
2. In which species of Riccia the midrib is absent ?.
3. Name of the types of rhizoids in Riccia ?.
4. Name of the tissue which gives rise to spore mother cell in Anthoceros ?.
5. Name one monoecious species of Anthoceros ?.
6. In which bryophyte pyrenoids are present in chloroplast ?.
7. What is the mode of nutrition in sporophyte in Funaria ?.
8. Name one growth stage of the gametophyte in the life cycle of Funaria ?.
9. What is thallus of Marachantia ?.
10. What is a gemma cup ?.
11. Define protonema ?.

12. What is calyptra ?.
13. What is peristome ?.
14. In which plant will you find peristome ?.
15. Name a fossil plant that you have studied ?.
16. Name the sporophytic species of Rhynia ?.
17. Who discovered Rhynia ?.
18. Which type of stele occurs in Rhynia ?.
19. Name the gametophytic phase of Rhynia major ?.
20. To which sub-division of ptridophyte Rhynia belongs ?.
21. Name a pteridophyte whose spores have eaters ?.
22. Name the type of stele found in Equisetum ?.
23. Which pteridophyta has a spore with elaters ?.
24. What is a stele ?.
25. Name a hydrophytic pteridophyte .
26. Nam the type of stele found in Marsilea .
27. Name the stele found in Marsilea rhizome .
28. What type of stele occurs in Selaginella ?
29. Name a pteridophyta growing in water .
30. In which plant ligule is found ?
31. From where will you collect Selaginella ?
32. Which pteridophyte has trabeculated endodermis ?
33. What is heterospory ?
34. What is a rhizophore ?
35. What is ligule ?
36. What is actinostele ?
37. What is solenosteie ?.
38. Define plectostele .
39. Name most primitive type of stele.
40. What is dictyostele ?.
41. Name the scientist who proposed stelar theory ?.
42. What is haplostele ?
43. Write one important character of gymnosperm ?.
44. What male core of Cyces ?.
45. What is megasporophyll ?.
46. What is coralloid root ?
47. What is ovule ?
48. What is microsporophyll ?.
49. write one economic importance of gymnospermic plant.
50. What is needle of Pinus ?

C. Short question (2.5 marks each)

1. Name two aquatic species of Riccia.
2. Write two important features of sporophytes of Riccia.
3. Name the parts of sporophyte of Riccia.
4. Name the class and order of Marchantia.
5. What is archesporium and perichaetium ?.
6. Name the two types of scales found in Marchantia.

7. What are gemmae and archesporium?
8. Name two monoecious species of Anthoceros.
9. Describe two important differences between liverworts and hornworts.
10. What is the difference between elaters and pseudoelaters?
11. Give two important points of sporophyte of Anthoceros.
12. What are the two algal characters of Anthoceros?
13. Write structure and function of protonema.
14. Name two distinct phases of gametophyte of Funaria.
15. Give two important points of moss archegonia.
16. Name two species of Rhynia.
17. Mention the age and locality of Rhynia.
18. When and by whom was Rhynia discovered?
19. What is heterophory and homospory?
20. What is protostele and solenostele ?
21. In which plant ligule is found and where?
22. Write two special features of Selaginella.
23. What are the two types of spores produced in Selaginella?
24. Write morphological nature of rhizophore.
25. Give two important points on Selaginella stem.
26. Give two important points on Selaginella ligule.
27. Why Selaginella is known as hetrosporous?
28. Give two important features of leaves of selaginella.
29. Name the type of stele found in Marsilea petiole.
30. Name the type o f stele found in Marsilea stem.
31. Where and in which plant vallecular canal is found?
32. What is the two function of elaters of spores of Equisetum?
33. What is plectostele and protostele?
34. What is the function of carinal canal?
35. Describe one hydrophytic and xerophytic character of Equisetum.
36. Mention two important characters which are common to Cycads and Ferns.
37. Mention two important characters shared by all gymnosperms.
38. Name the two tallest species of Cycas.
39. What is male and female strobillus?
40. What is microsporophyll and megasporophyll?
41. Give two important characters to differentiate the archegonia of pinus from that of Cycas.
42. Name two common species of Pinus growing in plains ?.
43. At what age the female cone of Pinus is able to release mature seeds?
44. Name the two species of Pinus from which chilgoza is obtained.
45. Give two important characters of Cyas.
46. Give two important character of Pinus.
47. Give two anatomical differences between the stems of Cycas and Pinus.
48. Give two important features of the order Gnetales.
49. While two important functions of Gnetum.
50. Write structural peculiarities of the stem of Gnetum.

D. Long questions (8 marks each)

1. Describe the sexual reproduction and anatomical structure of Riccia.

2. Describe the life cycle of Riccia.
3. Give an account of thallus structure and anatomical structure of Marchantia.
4. Describe in details the life cycle of Marchantia.
5. Describe in details the life cycle of Anthroceros.
6. Compare the structure of sporophytes of Marchantia with Anthoceros.
7. Describe the life cycle of Funaria.
8. Describe the life history of Psilotum.
9. What is heterospory and seed habit? Explain in with the help of Selaginella.
10. Give a comparative account of reproductive structures of Selaginella and Equisetum.
11. Describe the life cycle of Selaginella.
12. Describe the morphological nature of sporocarp of Marsilea.
13. Explain the life cycle of Marsilea with the help of labelled diagram only.
14. Describe the anatomical features of rhizome and petiole of Marsilea.
15. Describe the habitat, habit and external morphology of Cycas.
16. Describe the female gametophyte of Cycas and comment on various changes brought about after fertilization.
17. Describe the post fertilization changes in the ovule of Cycas.
18. Give an illustrated account of the internal structure of the Pinus needle and point out its xerophytic features.
19. Describe the internal structure of Pinus needle and compare it with the leaflet of Cycas.
20. Give a detailed account of the morphology and anatomy of Gnetum.