Time : 125 Mins **BIOLOGY TEST 8 PLANT KINGDOM 1** **Marks : 500**

1. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
A. Psilopsida	(i) Psilotum
B. Lycopsida	(ii) Equisetum
C. Sphenopsida	(iii) Selaginella
D. Pteropsida	(iv) Dryopteris

a) A-(i), B-(ii), C-(iii), D-(iv) b) A-(i), B-(iv), C-(iii), D-(ii) **c) A-(i), B-(iii), C-(ii), D-(iv)**
d) A-(i), B-(iii), C-(iv), D-(ii)

2. **Assertion:** Mosses are of great ecological importance.
Reason: Mosses prevent soil erosion by forming dense mat on the soil.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

Solution : -
Mosses along with lichens are the first organisms to colonise rocks and hence, are of great ecological importance. They decompose rocks making the substrate suitable for the growth of higher plants. Since mosses form dense mats on the soil, they reduce the impact of falling rain and prevent soil erosion.

3. Which of the following shows coiled RNA strand and capsomeres?
a) Polio virus **b) Tobacco masaic virus** c) Measles virus d) Retrovirus

4. In the light of recent classification of living organisms into three domains of life (bacteria, archaea and eukarya), which one of the following statements is true about archaea?
a) Archaea completely differ from prokaryotes and eukaryotes b) Archaea completely differ from prokaryotes
c) Archaea resemble eukarya in all respects
d) Archaea have some novel features that are absent in other pyokaryotes and eukaryaotes

5. Which one of the following does not differ in E.coli and Chlamydomonas?
a) Cell wall b) Cell membrane c) Ribosomes **d) Chromosomal Organization**

6. Seed habit first originated in _____ .
a) certain ferns b) certain pines **c) certain monocots** d) primitive dicots

Solution : -
The tendency towards seed formation is called seed habit. It was developed in fossil gymnosperm of group Cycadofilicales (pteridosperms), i.e. seed ferns, e.g. Lyginopteris which bears characters of cycads and fern both. Seed habit is shown by few pteridophytes like Selaginella, Marselia, Isoetes, etc. which exhibit heterospory.

7. Most advanced Gymnosperm belongs to:-
a) Cycadales b) Coniferales **c) Gnetales** d) Cyadofillicales

8. Which of the following is not monoecious plant?
a) Cycas b) Pinus **c) Wheat** d) Mustard

9. Which one of the following living organisms completely lacks a cell wall?
a) Cyanobacteria **b) Sea-fan(Gorgonia)** c) Saccharomyces d) Blue-green algae

10. Common example of red algae is
a) Porphyra b) Batrachospermum c) Ectocarpus **d) both (a) and (b).**

Solution : -

Solution :
Porphyra and Batrachospermum, both are red algae (Rhodophyceae). Ectocarpus is a filamentous marine brown alga (Phaeophyceae).

11. What is the ploidy of primary endosperm nucleus (PEN) in angiosperms?
    a) Haploid b) Diploid **c) Triploid** d) Polyploid

12. Select one of the following of important featuresdistinguising Gnetum from Cycas and Pinus and showing:
    a) Embryo development and apical meristem b) Absence of resin duct and leaf venation
    c) Presence of vessel elements and absence of archegonia d) Perianth and two integuments

    Solution : -
    Members of order Gnetales posses vessels and show absence of archegonia.

13. Which one of the following fungi contains hallucinogens?
    a) Morchella esculenta b) Amanita muscaria c) Neurospora sp. d) Ustilago sp.

14. A moss sperm moves by means of
    a) pseudopodia b) cilia **c) flagella** d) any of these

15. Which one of the following is not an inclusion body found in prokaryotes?
    a) Cyanophycean granule b) Glycogen granule **c) Polysome** d) Phosphate granule

16. Pteridophytes differ from mosses/ bryophytes in possessing _____ .
    a) flagellate spermatozoids b) independent gametophyte **c) well developed vascular system**
    d) archegonia

    Solution : -
    Pteridophytes are most primitive vascular flowerless, spore producing cryptogamic land plants, commonly called vascular amphibians/botanical snakes/spore producing seedless tracheophytes. They are first vascular land plants to have independent sporophyte diploid plant body with true root, stem and leaves. In contrast bryophytes, the amphibians of plant kingdom are devoid of true roots, stem and leaves, with no vascular supply but root-like, non-vascular rhizoids, leaf-like and stemlike structures are present.

17. Green algae usually have a rigid cell wall made of an inner layer of_____and an outer layer of_____.
    a) cellulose, cellulose b) pectose, pectose c) pectose, cellulose **d) cellulose, pectose**

    Solution : -
    Cell wall of green algae is thin, transparent and firm and consists of outer pectic and inner cellulosic layers. It is smooth but in most of species it gets thickened at the anterior end to form an apical papilla.

18. In pteridophyta, reduction division occurs when:-
    a) Prothallus is formed **b) Spores are formed** c) Sex organs are formed d) Gametes are formed

19. Among the following plant group which have independent gametophyte and sporophyte?
    a) Bryophyta **b) Pteridophyta** c) Gymnosperms d) Angiosperms

20. Which of the following is not a moss?
    a) Polytrichum b) Sphagnum c) Funaria d) Riccia

    Solution : -
    Riccia is a liverwort (Hepaticae), which grows predominantly in wet terrestrial habitats and are free floating or submerged aquatic

21. In which organisms external fertilization occurs:-
    a) Echinodermata/Moss b) Hemichordata/Fern c) Reptilia/Gymnosperm **d) Amphibia/Algae**

22. Match the contents of column-I with those column-II

	Column-I		Column-II
(a)	Fungi	(i)	Chitinase
(b)	Baceria	(ii)	Cellulase
(c)	Plant cell	(iii)	Lysozymes

a)	b)	c)	**d)**
a b c	a b c	a b c	**a b c**
i ii iii	iii ii i	ii iii i	**i iii ii**

23. Cell wall is absent in:

a) Nostoc b) Aspergillus c) Funaria **d) Mycoplasma**

24. Moss peristome takes part in _____ .
a) spore dispersal b) photosynthesis c) protection d) absorption

Solution : -
Peristome functions in the dispersal of the spores. Peristome constitutes rings of teeth like projections at the rim of the capsule of the mosses. In Funaria, peristome are 32 in number, arranged in two rings of 16 each (a) outer exostome and (b) inner endostome.

25. Laminarin and mannitol, the reserve food of brown algae are:
a) lipids **b) complex carbohydrates** c) proteins d) lipoproteins.

26. Pneumatophores occur in _____ .
a) Carnivorous plants b) Free-floating hydrophytes **c) Halophytes** d) Submerged hydrophytes

Solution : -
(i) Pneumatophores are modified roots which are present in halophytes. They are meant for gaseous exchange or respiration in mangroves. Halophytes grows in saline swamps, and marshy areas, so their roots come out of water for respiration. The gaseous exchange occurs through small pores present on pneumatophores called-lenticels.
(ii) Carnivorous Plants, Free-floating Hydrophytes and Submerged hydrophytes do not possess pneumatophores.

27. The leaves of gymnosperms are well-adapted to withstand extremes of temperature, humidity, and wind, because of which of the following features?
a) Needle like leaves b) Thick cuticle c) Sunken stomata **d) All of these**

Solution : -
Conifers have a number of xerophytic characters such as needle-like **(e.g., Pinus)**, scale-like **(e.g., Thuja)** or small and leathery leaves **(e.g., Araucaria)**, thick cuticle, sclerenchymatous hypodermis and sunken stomata to reduce transpiration. They are, thus, well adapted to tide over the winter period when the soil becomes frozen and availability of water is very little.

28. Which of the following are likely to be present in deep sea water?
a) Saprophytic fungi **b) Archaebacteria** c) Eubacteria d) Blue-green algaye

29. Which of the following statements is incorrect about Cycas?
a) It has unbranched stem. b) It possesses pinnately compound leaves. c) It is a dioecious plant.
d) It is a non-archegoniate plant.

Solution : -
Cycas is an archegoniate plant, in which female gametophyte contains archegonia. The archegonia are formed from the gametophytic cells lining the archegonial chamber. The number of archegonia formed in a gametophyte is variable among species.

30. Which one of the following shows isogamy with non-flagellated gametes?
a) Sargassum b) Ectocarpus c) Ulothrix **d) Spirogyra**

31. Harmful activity of Blue green algae is:-
a) Denitrification b) Water-bloom c) Increase alkalinity of soil **d) Decrease fertility of soil**

32. Protista is similar to Plantae and different from monera in:-
a) Mode of nutrition b) Cellular grade of organization **c) Nuclear membrane** d) Cell wall

33. The term taxon refers to:-
a) Name of a species b) Name of genus c) Name of family **d) A taxonomic group of any rank**

34. Which of the statements regarding haplontic life cycle is incorrect?
a) Sporophytic generation is represented only by the one-celled zygote.
b) There is no free-living sporophyte. c) Mitosis in the zygote results in the formation of haploid spores.
d) The haploid spores divide mitotically and form the gametophyte.

Solution : -
During haplontic life cycle, meiosis in the zygote results in the formation of haploid spores.

35. Which one of the following statements is wrong?

a) Mannitol is stored in Rhodophyceae b) Algin and Carrageen are product of algae
c) Agar-agar is obtained frone Gelidium and Gracilaria d) Chlorella and Spirulina are used as space food.

Solution : -
Mannitol is the stored food in Phaeophycea.

36. _____systems of classification were based on natural affinities among the organisms.
a) Artificial **b) Natural** c) Phylogenetic d) Sexual

Solution : -
Natural system of classification takes into consideration comparable study of number of characters so as to bring out natural similarities and dissimilarities and hence natural relationships among the organisms. They include morphological characters, anatomical characters, cytological characters, physiology, ontogeny or development, reproduction, cytochemistry and biochemistry, experimental taxonomy, etc.

37. Select the correct pattern of arrangement of reproductive structures for gymnosperms.
a) Spores →Sporophylls → Sporangia → Strobili **b) Spores →Sporangia → Sporophylls →Strobili**
c) Sporangia → Sporophylls → Spores →Strobili d) Spores →Sporangia → Strobili → Sporophylls

Solution : -
Gymnosperms are heterosporous, i.e., produce two different kinds of spores - the male (microspores) and the female (megaspores). The spores are borne inside the sporangia. The two types of sporangia (microsporangia and megasporangia) are borne on special leaf-like structures, called microsporophylls (= stamens) and megasporophylls (= carpels) respectively.The sporophylls are usually aggregated in the form of compact structures called cones or strobili. The cones are generally unisexual, i.e., the male cones are microsporangiate (pollen cones) and the female cones are megasporangiate (seed cones).

38. The gametophyte is not an independent, free living generation in _____ .
a) Polytrichum b) Adiantum c) Marchantia **d) Pinus**

Solution : -
The gametophyte is not an independent, free living generation in Pinus. The male and female gametophytes in gymnosperms are not independent and free living. They remain within the sporangia present on the sporophyte. Bryophytes and Pteridophytes have independent and free living gametophytes.

39. Endosperm of gymnosperm is ontogenetically similar to angiospermic
a) Endosperm **b) Embryo sac** c) Archegonium d) Megasporangia

40. Which one of the following is not a biofertilizer
a) Agrobacterium b) Rhizobium c) Nostoc **d) Mycorrhiza**

41. The function of leghaemoglobin in the root nodules of legumes is:-
a) Inhibition of nitrogenase activity **b) Oxygen removal** c) Nodule differentiation
d) Expression of nif gene

42. The main difference between gram ⊕ and gram Θ resides in the composition of:-
a) Cilia **b) Cell-wall** c) Cell-membrance d) Cytoplasm

43. _____and_____are unicellular algae, rich in proteins,that are used as food supplements even by space travellers.
a) Chlorella, Spirulina b) Gelidium, Gracilaria c) Porphyra, Spirogyra d) Laminaria, Spirogyra

Solution : -
Chlorella (Green alga), as food supplement is.rich in protein and carbohydrates. It yields about 30% proteins, 15% lipids, 30% carbohydrates, and 5% ash. Spirulina (blue-green alga) is one of the richest sources of protein and vitamin B_2. In long-range space exploration, scientist have turned to **Chlorella** and Spirulina to use them as portable oxygen generators and food sources.

44. Which of the following statements regarding nomenclature is correct?
a) Generic name always begains with capital letter whereas specific epithet with small letter
b) Scientific name always should be printed in italics
c) Scientific name when typed or handwritten should be separately underlined **d) All the above**

45. Match column I with column II and select the correct option from the codes given below.

Column I	Column II

A. Sagopalm	(i) Ephedra
B. Chilgoza fruit	(ii) Pinus gerardiana
C. Ephedrine drug	(iii) Cycas revoluta
D. Cedar wood oil	(iv) Juniperus virginiana

a) A-(iv), B-(ii), C-(i), D-(iii) **b) A-(iii), B-(ii), C-(i), D-(iv)** c) A-(iii), B-(iv), C-(i), D-(ii)
d) A-(ii), B-(iii), C-(i), D-(iv).c

46. Which one of the following is correct statement?
a) A antheridiophores and archegoniophores are present in pteridophytes
b) Pteridophytes gametophyte has a protonemal and leafy stage
c) In gymnosperms, female gametophyte is freeliving d) Origin of seed habit can be traced in pteridophytes

Solution : -
The development of the zygote into young embyro takes place within the female gametopytes. This event is a precursor to the seed habit.

47. Myxomycetes are-
a) saprobes or parasites, having mycelia, a sexual reproduction by fragmentation, sexual reproduction
b)
Slimy mass of multinucleate protoplasm, having pseudopodia-like structures for engulfing food reproduction through fragmentation of zoospores
c) Prokaryotic organisms, cellular or acellular saprobes or autotrophic, reproduce by binary fission
d)
Eukaryotic, single-called or filamentous saprobes or autotrophic, asexual reproduction by division of haploid individuals, sexual reproduction by fusion of two cells or their nuke

48. Evolution of seed habit first started in:-
a) Selaginella like ancestral pteridophytes b) Psilotum like ancestral pteridophytes c) Gymnosperms
d) Mosses

49. Transformation was discovered by:-
a) Meselson and Stahl b) Hershey and chase **c) Griffith** d) Watson and Crick

50. ICBN stands for:
a) Indian code of Botanical Nomenclature b) Indian Congress of Botanical Names
c) International code of Botanical Nomenclature d) International Congress of Botanical Names

51. **Assertion:** In angiosperms, each cell of the embryo sac is haploid.
Reason: In angiosperms, embryo sac formation is preceded by meiosis.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If both assertion and reason are true but reason is not the correct explanation of assertion.
d) If both assertion and reason are false.

Solution : -
In angiosperms, pistil consists of an ovary enclosing one to many ovules. Within ovules are present highly reduced female gametophytes termed embryo sacs. The embryo-sac formation is preceded by meiosis. Hence, each of the cells of an embryo-sac is haploid.

52. In bryophytes
a) sporophytes are dependent upon gametophytes
b) sporophyte and gametophyte generations are independent c) sporophyte in itself completes the life cycle
d) gametophytes are dependent upon sporophyte.

53. Spore dissemination in some liverworts is aided by:
a) Peristome teeth b) Elaters c) Indusium d) Calyptra

Solution : -
Elaters are ribbon or tube like structures which are hygroscopic in nature present in the capsule of liverwort. It is derived from sporogenous tissue and assist in spore dispersal. In case of mosses calyptras is present.

54. Two microbes found to be very useful in genetic engineering are:

a) Diplococcus sp. and Pseudomonas sp. b) Crown gall bacterium and Caenorhabditis elegans
c) Escherichia coli and Agrobacterium tumefaciens d) Vibrio cholerae and a tailed bacteriophage

55. select incorrect statement about viroid:-
a) Free infectious RNA b) It was discovered T.O Diener c) It caues potato spindle tuber disease
d) It contains high molecular weight RNA

56. The cell walls of fungi are composed of:-
a) Chitin and cellulose b) cellulose and polysccharides **c) Chitin and polysccharides**
d) Chitin, polysccharides and glycogen

57. Select false statement:-
a) Lichens are symbiotic associations between algae & fungi b) Virus name was given smaller than bacteria
c) virus name was given by pasteur **d) virus are facultative parasite**

58. Artificial systems gave equal weightage to vegetative and sexual characteristics; this is not acceptable because often_____characters are more easily affected by environment.
a) vegetative b) sexual c) anatomical d) physiological

59. Which of the following statements is correct?
a) Azotobacter fixes atmospheric nitrogen in the nodules of legumes
b) Certain cyanobacteria like Anabaena can fix nitrogen in paddy fields
c) Azospirillium species fixes nitrogen in chick-pea
d) Mycorrhiza absorb nitrates from soil and provide it to the plant

60. Pollen Grain is a reduced
a) Female gametophyte **b) Male Gametophyte** c) Young sporphyte d) Parent Sporophyte

61. Archegoniophore occurs in:
a) Chara b) Funaria c) Adiantum **d) Marchantia**

Solution : -
Refer the diagram of Marchantia.

62. Which of the following propagates through leaf-tip?
a) Walking fern b) Sproux-leaf plant **c) Marchantia** d) Moss

Solution : -
By fragmentation vegetative propagation takes place in mosses. Marchantia is a liverwort in which propagation also occurs by fragmentation. Walking fern Adiantum propagates through leaf tip.

63. Chloroplast of Chlamydomonas is _____ .
a) stellate **b) cup-shaped** c) collar-shaped d) spiral

Solution : -
In Chlamydomonas, chloropiast is single and cupshaped. Chloroplasts are the pigment (chl-a and chl-b) containing bodies present in green algae. The green colouration of the members of Chlorophyta is due to the presence of excess of chlorophyll in the chloroplasts. The chloroplasts are well defined bodies met within every cell of the members of this class, though number and shape of the chloroplasts varies in different orders of the class.

64. **Assertion:** Spores in mosses are contained within the capsule.
Reason: Spores are formed by mitotic division in mosses.
a) If both assertion and reason are true and reason is the correct explanation of assertion.
b) If both assertion and reason are true but reason is not the correct explanation of assertion.
c) If assertion is true but reason is false. d) If both assertion and reason are false.

Solution : -
In mosses, after fertilisation, the zygote develops into a sporophyte, consisting of a foot, seta and capsule. The sporophyte in mosses is more elaborate than that in liverworts. The capsule contains spores. Spores are formed after meiosis and develop into new gametophyte.

65. Which of the following are not membrane -bouns :
a) Mesosomes b) Vacuoles **c) Ribosomes** d) Lysosomes

66. In Pinus/Cycas/gymnosperms, the endosperm is _____ .

a) triploid **b) haploid** c) diploid d) tetraploid

Solution : -

In gymnosperms, e.g. Pinus, Cycas, endosperm develops before fertilisation and is haploid in nature. In angiosperms, endosperm is triploid (3n) and formed after double fertilisation.

67. Them most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are ones categorised as:
a) Chemosynthetic autotrophs **b) Heterotrophic bacteria** c) Cyanobacteria d) Archaebacteira

68. A sterile jacket around gametangia is found among
a) bryophytes b) lichens c) algae d) fungi.

69. Which one pair of examples, will correctly represent the grouping Spermatophyta according to one of the schemes of classifying plants?
a) Ginkgo, Pisum b) Acacia, Sugarcane c) Pinus, Cycas d) Rhizopus, Triticum

Solution : -

Spermatophytes are plants bearing seeds containing a dormant embryo. It includes gymnosperms and angiosperms. Ginkgo belongs to group gymnosperms and pisum belongs to group angiosperms.

70. Two plants can be conclusively said to belong to the same species if they:
a) Have same number of chromosomes **b) Can reproduce freely with each other and form seeds**
c) Have more than 90 percent similar genes d) Look similar and possess identical secondary metabolites

71. Match column I with column II and select the correct option from the codes given below.

Column I	**Column II**
A. Food	(i) Brown algae
B. Agar	(ii) Porphyra, Laminaria
C. Algin	(iii) Gelidium, Gracilaria
D. Carrageenin	(iv) Red algae

a) A-(ii), B-(iii), C-(i), D-(iv) b) A-(ii), B-(iii), C-(iv), D-(i) c) A-(iii), B-(ii), C-(iv), D-(i)
d) A-(iii), B-(ii), C-(i), D-(iv)

72. Protonema is
a) haploid and is found in mosses b) diploid and is found in liverworts
c) diploid and is found in pteridophytes d) haploid and is found in pteridophytes

Solution : -

The predominant stage of the life cycle of a moss (bryophyte) is the gametophyte which consists of two stages. The first stage is the protonema stage, which develops directly from a spore. It is a creeping, green, branched and frequently filamentous stage. The second stage is the leafy stage, which develops from the secondary protonema as a latera! bud. It consists of upright, slender axes bearing spirally arranged leaves attached to the soil through multicellular and branched rhizoids. This stage bears the sex organs.

73. The members of Phaeophyceae or brown algae are found primarily in/on
a) freshwater **b) marine habitat** c) terrestrial habitat d) rock.

Solution : -

Brown algae or Phaeophyta include about 2000 species. Most of them are marine except few, e.g., **Pleurocladia, Heribandiella** and **Bodanella**, which are found in freshwater in European countries.

74. Maximum nutritional diversity is found in the group:-
a) Monera b) Plantae c) Fungi d) Animalia

75. Cyanobacteria are classified under
a) Protista b) Planta **c) Monera** d) Algae.

Solution : -

Cyanobacteria are classified under Kingdom Monera as they are prokaryotes. They are generally photosynthetic in nature and contains pigments, chlorophyll a, carotenoids, etc. Nostoc and Oscillatoria are examples of this category.

76. Prothallus (gametophyte) gives rise to fern plant (sporophyte) without fertilisation. It is _____ .
a) apospory **b) apogamy** c) parthenocarpy d) parthenogenesis

Solution : -

Apogamy refers to the development of sporophytes from gametophyte without fertilisation. In fern plant, prothallus (gametophyte) gives rise to main plant body (sporophyte) directly from somatic cell without forming gametes. Sporophyte thus formed is haploid in nature.

77. Methanogens are belong to:-

a) Archaebacteria b) Eubacterica c) Filamentous bacteria d) Cyanobacteria

78. Pteridophyta differs from bryophyta in having:-

a) Vascular tissuec b) Archegonia c) Alternation of generations d) Motile sperm

79. Which one is wrong statement?

a) Mucor has biflagellate zoospores. b) Haploid endosperm is typical feature of gymnosperms.

c) Brown algae have chlorophyll a and c and fucoxanthin.

d) Archegonia are found in Bryophyta, Pteridophyta and Gymnosperms

Solution : -

Mucor has biflagellate zoospores. It is wrong statement. Because Mucor belongs to Zygomycetes which gametes are non-motile and non-flagellated.

80. Choose the incorrect statement regardily mycoplasma:-

a) They lack cell well b) They are smallest living cells c) They can survive without oxygen

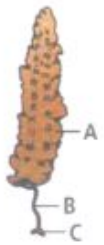
d) They have mesosome for respiration

81. Phycobilins are characteristic pigments of:-

a) Rhodophyta and phaeophyta b) Rhodophyta and phrophyta c) phrophyta and cyanophyta

d) Rhodophyta and cyanophyta

82. Refer to the given figure and select the correct option.



a)

A	**B**	**C**
Stipe	Holdfast	Frond

b)

A	**B**	**C**
Frond	**Stipe**	**Holdfast**

c)

A	**B**	**C**
Holdfast	Frond	Stipe

d)

A	**B**	**C**
Stipe	Frond	Holdfast

83. One gene-one enzyme relationship was established for the first time in:-

a) Diplococcus pneumoniae b) Neurospora crassa c) Salmonella typhimurium **d) Escherichia Coli**

84. Choose the correct set of bacterial disease

a) Mumps, cholera, dengue b) Chicken pox, typoid, mimps c) Mumps, tetanus, chicken pox

d) cholera, typhoid, tetanus

85. In pteridophytes, a spore germinates to produce

a) Sporophyte b) sporogonium **c) prothallus** d) microsporophyll.

Solution : -

In pteridophytes, spore is a haploid structure, which develops after meiosis of spore mother cell. On germination, it gives rise to a green haploid prothallus (gametophyte) which is monoecious, i.e., has both antheridia (male sex organs) and archegonia (female sex organs).

86. In most green algae, pyrenoids, the storage bodies, are located in _____.

a) chloroplasts b) mitochondria c) cytoplasm d) nucleus

Solution : -

Pyrenoids are cellular micro-compartments that are not membrane bound organelles. Pyrenoids are found within chloroplast. Chloroplasts generally contain one to many pyrenoids for storage of starch.

87. In a moss the sporophyte:

a) arises from a spore produced from the gametophyte
b) manufactures food for itself, as well as for the gametophyte **c) is partially parasitic on the gametophyte**
d) produces gametes that give rise to the gametophyte

Solution : -

Main plant body in moss is gametophyte which sporophyte is meant for spore dispersal. Thus, it is said that the sporophyte is partially parasitic on gametophyte.

88. Gymnosperm called as a living fossil is
a) Cycas b) Ginkgo c) Juniperus **d) both (a) and (b).**

Solution : -

The gymnosperms are comparatively more ancient than the angiosperms in evolutionary terms. Most of the gymnosperms have now become extinct and the group is presently represented by only 900 living species. The living gymnosperms are widely distributed in the cold climates where snow is the source of water. Cycas and Ginkgo are referred to as living fossils because they have not yet changed over the years while its related members or species have become extinct or fossilised. The living fossil represents a living unchanged example of an extinct group or genera, etc.

89. Nitrogen fixation in root nodules of Anus is brought about by:-
a) Frankia b) Azorhizobium c) Bradyrhizobium d) Clostridium

90. Which one of the wrong pairing for the disease and its causal organism?
a) Root-knot of vegetables-Meloidogyne sp **b) Late blight of potato-Alternaria solani**
c) Black rust to wheat - Puccinia gramins d) Loose smut of wheat - Ustilago nuda

91. Match the following list of microbes and the importance:

(a)	Saccharomyces cerevisiae	(i)	Production of immunosuppressive agents
(b)	Monascus purpureus	(ii)	Ripening of swiss cheese
(c)	Trichoderma polysporum	(iii)	Commercial production of ethanal
(d)	Propionibacterium sharmanil	(iv)	Production of blood cholesterol lowering agents

a)				**b)**				c)				d)			
a	b	c	d	**a**	**b**	**c**	**d**	a	b	c	d	a	b	c	d
iii	i	iv	ii	**iii**	**iv**	**i**	**ii**	iv	iii	iii	i	iv	ii	i	iii

92. Ringworm in humans is caused by :
a) Viruses b) Bacteria **c) Fungi** d) Namatodes

93. Match the following

(a)	D.J Ivanowsky	(i)	Discovery of viroids
(b)	Beijerinek	(ii)	Crystallisation of virus
(c)	W.M. Stanley	(iii)	Contagium vivum fluidum
(d)	T.O.Diener	(iv)	Discovery of TMV

a) a(iv), b(iii), c(ii), d(i) b) a(iv), b(iii), c(i), d(ii) c) a(iii), b(iv), c(ii), d(i) d) a(ii), b(iii), c(iv), d(i)

94. In_____, a dominant and independent haploid gametophyte alternates with a short-lived, dependent sporophyte.
a) algae **b) bryophytes** c) pteridophytes d) gymnosperms

Solution : -

In bryophytes, a dominant, independent, photosynthetic, thalloid or erect phase is represented by a haploid gametophyte and it alternates with the short-lived multicellular sporophyte totally or partially dependent on the gametophyte for its anchorage and nutrition.

95. A vascular cryptogam is:
a) Equisetum b) Cedrus c) Marchantia d) Ginkgo

Solution : -

Pteridophytes are called vascular cryptogams; hence equisetum is a vascular cryptogam.

96. Gemmae are asexual reproductive bodies of
a) brown algae b) mosses **c) liverworts** d) red algae

97. Which one is the most advanced from evolutionary view point?

a) Selaginella b) Funaria c) Chlamydomonas **d) Pinus**

Solution : -

(i) From the evolutionary point of view, the given options can be arranged as Chlamydomonas, Funaria, Selaginella, and pinus.

(ii) Pinus, i.e. gymnosperms are the most evolved seed bearing phanerogamic vascular sporophytic plants, after angiosperms (most advanced group of plants).

(iii) Pteridophytes (e.g. Selaginella) are spore bearing non-seeded vascular cryptogams. Algae, bryophytes and pteridophytes resemble each other in dependence on water for fertilisation.

98. Which of the following is represents maximum number of species number of species among global biodiversity?
a) Mosses and ferns b) Algae c) Lichens **d) Fungi**

99. Phycoerythrin, chlorophyll a and chlorophyll d are characteristics of
a) Phaeophyceae b) Xanthophyceae c) Chlorophyceae **d) Rhodophyceae.**

100. No zoospore formation has been obseved in the algal members beloning to:-
a) Chlorophyeae b) Brown algae c) Phaeophyceae **d) Cyanophyceae**

101. The sporophyte is attached to the gametophyte in
a) algae b) fungi **c) bryophytes** d) pteridophytes.

102. One of the free-living, anaerobic nitrogen-fixer is:
a) Azotobacter b) Beijernickia **c) Rhodospirillum** d) Rhizobium

103. Which fungus is used extensively in biochemical and genetic work?
a) Agaricus b) Aspergillus c) Claviceps d) Neurospora

104. Match items in Column I with those in Column- II:

Column-I	**Column-II**
(A) Peritrichous	(J) Ginkgo flagellation
(B) Livingfossil	(K) Macrocystis
(C) Rhizophore	(L) Escherichia coli
(D) Smallest flowering plant	(M) Selaginella
(E) Largest perennial	(N) Wolffia alga

Select the correct answer from the following:

a) A-L; B-J; C-M; D-N; E-K; b) A-K; B-J; C-L; D-M; E-N c) A-N; B-L; C-K; D-N; E-J; d) A-J; B-K; C-N; D-L; E-K

Solution : -

(i) Peritrichous flagellation means having flagella projecting in all directions (e.g., E. coli).

(ii) Gingko, is a living fossil. Newly found specimens that grew more than a hundred million years ago are remarkably similar to present-day Plants.

(iii) Selaginella has a rhizophore which is a proplike structure that originates at a point of branching and that forks dichotomously after making contact with the soil or a hard surface.

(iv) The flower of Wolfflra is the smallest known flower in the world, measuring merely 0.3 mm long. It has one stamen and one pistil.

(v) Macrocystis, a kelp (see weed) is the largest of all algae.

(vi) The stage of the life cycle that is usually seen is the sporophyte, which is perennial and individuals persist for many years.

105. The given figure shows alan

a) Selaginella leaf b) Psilotum leaf c) Adiantum plant d) Dryopteris plant

Solution : -

Salvinia is an aquatic fern with both annual (e.g., S. natans) and perennial species (e.g., S. molesta). The plant body consists of a floating stem bearing two rows of large green hairy leaves on the upper surface and highly branched leaf roots on the lower surface.

106. Nuclear membrane is absent in:-
a) Penicillium b) Agaricus c) Volvox **d) Nostoc**

107. The alga which can be employed as food for human beings is:
a) Chlorella b) Spirogyra c) Polysiphonia d) Ulothrix

Solution : -
Chlorella and Spirulina are unicellular algae, rich in proteins and are used as food supplements even by space travellers

108. Read the given statements and select the correct option.
Statement 1: Main plant body of bryophytes is sporophytic.
Statement 2: Main plant body of pteridophytes is gametophytic.
a) Both statements 1 and 2 are correct. b) Statement 1 is correct but statement 2 is incorrect
c) Statement 1 is incorrect but statement 2 is correct. **d) Both statements 1 and 2 are incorrect.**

Solution : -
Main plant body is gametophytic in bryophytes and sporophytic in pteridophytes.

109. Match column I with column II and select the correct option from the codes given below.

Column I	Column II
A. Pteris	(i) Bryophyte
B. Cedrus	(ii) Pteridophyte
C. Sonchus	(iii) Gymnosperm
D. Marchantia	(iv) Angiosperm

a) A-(ii), B-(iii), C-(iv), D-(i) b) A-(ii), B-(i), C-(iv), D- (iii) c) A-(i), B-(iii), C-(iv). D-(ii)
d) A-(iii), B-(iv), C-(ii), D-(i)

110. Nitrifying bacteria:-
a) Oxidize ammonia to nitrates b) Convert free nitrogen to nitrogen compounds
c) Convert proteins into ammonia d) Reduce nitrates to free nitrogen

111. In pteridophytes, prothallus produces
a) sporangia **b) antheridia and archegonia** c) vascular tissues d) root, stem and leaf.

112. Fill in the blanks a, b, c and d by observing the characters given in the table and choose the correct answer from the options:-

Plant group	Main body	Fertilisation	Vascular tissue	Female sex organ
Bryophyte	Gametophyte	Zoodiogamy	Absent	(c)
Pteridophyta	(a)	Zoodiogamy	(b)	Archegonium
Gymnosperm	Sporophyte	Siphnogamy and zoodiogamy	Present	(d)

a)

a	**b**	**c**	**d**
Sporophyte	**Present**	**Archegonium**	**Archegonium**

b)

a	b	c	d
Sporophyte	Absent	Oogonium	Archegonium

d)

a	b	c	d
Gametophyte	Present	Archegonium	Carpel

c)

a	b	c	d
Gametophyte	Present	Archegonium	Carpel

113. Chlorophylla, chlorophyll and phycoerythrin pigments are found in:
a) Cyanophyceae b) Bacillariophyceae **c) Rhodophyceae** d) Chlorophyceae

Solution : -
Rhodophyta are commonly called red algae because of the predominance of the red pigment, r-phycoerythrin in their body along with chl.a and chl.d.

114. A plant having seeds but lacking flowers and fruits belongs to _____ .
a) pteridophytes b) mosses c) ferns **d) gymnosperms**

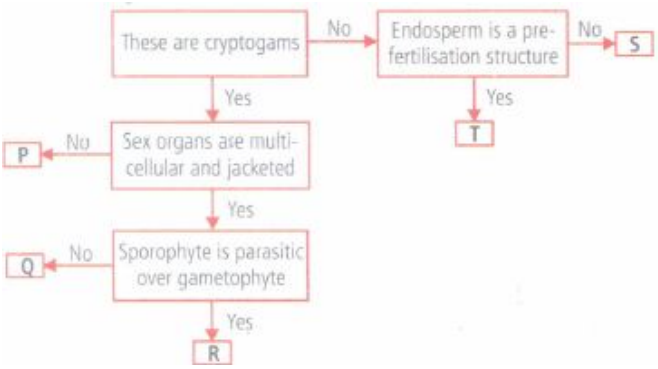
Solution : -
Gymnosperms (Gk Gymno = naked; sperma-seed) are commonly known as naked seed plants because their ovules (which later become seeds) are not covered and lie naked on the surfaces of specialised leaves called megasporophylls or ovuliferous scales, arranged into cones, flowers are absent; seed may have two, (e.g. Cycas) or more (e.g. Pinus) cotyledons.

115. Yeast is used in the production of:-
a) Bread and beer b) Cheese and butter c) Citric acid and lactic acid d) Lipase and pectinase

116. Male and female gametophytes do not have free independent existence in:
a) Pteris **b) Cedrus** c) Polytrichum d) Funaria

Solution : -
In gymnosperms, the male and the female gametophytes do not have an independent free-living existence. Cedrus is a gymnosperm.

117. Refer to the given flow chart regarding different groups of Kingdom Plantae.



Which of the following is true regarding P, Q, R, S and T?
a) Examples of group 'P' include Riccia, Marchantia, Sphagnum, etc.
b) Members of group 'R' can be both homosporous as well as heterosporous.
c) Group 'Q' includes seedless vascular plants having sporophytic plant body.
d)
Group 'S' is more ancient than group T and formed a dominant vegetation on Earth some 200 million years back in mesozoic era.

Solution : -
Cryptogams are the plants without seeds.Inthe given flow chart, 'P' represents algae in which sex organs are usually unicellular and non-jacketed. 'Q' represents pteridophytes, in which both sporophytic and gametophytic generations are independent. In pteridophytes, the main plant body is sporophyte which is differentiated into true root, stem and leaves. 'R' represents bryophytes in which diploid sporophyte lives as a parasite on an independent haploid gametophyte. All known members of bryophytes have been found to be homosporous. 'S' and T respectively represent angiosperms and gymnosperms, which are included under phanerogams. Gymnosperms evolved earlier and thus are more ancient than angiosperms. Gymnosperms formed dominant flora on Earth about 200 million years ago in the mesozoic era.

118. Read the given statements and select the correct option.
Statement 1 : Bryophytes are amphibians of plant kingdom.
Statement 2 : They live in soil but depend on water for sexual reproduction.
a) Both statements 1 and 2 are correct. b) Statement 1 is correct but statement 2 is incorrect
c) Statement 1 is incorrect but statement 2 is correct d) Both statements 1 and 2 are incorrect.

Solution : -
Bryophytes are known as 'amphibians of plant kingdom' because they are adapted to land as well as water habitats. In their vegetative structure, bryophytes have become adapted to land. But they depend on water for sexual reproduction because the swimming habit is retained by their sperms.

119. Branch of biology, which deals with study of relationship among different kind of organisms, is
a) Taxonomy **b) systematics** c) Ecology d) Taximatrics

120. Rhizoids of hepaticopsida and anthoceotopsida are:-
a) Multicellular and branched **b) Unicellular and unbranched** c) Unicellular and branched
d) Multicellular and unbranched

121. Resemblances between algae and bryophytes include
a) presence of root-like, stem-like and leaf-like structures
b) thallus-like plant body, lack of vascular tissue, autotrophic nutrition
c) thallus-like plant body, presence of vascular tissue,autotrophic nutrition
d) presence of roots, heterotrophic nutrition.

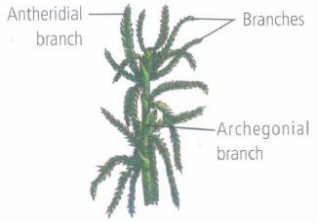
Solution : -
The resemblances between algae and bryophytes are given below:
(i) Algae and bryophytes both are autotrophic.
(ii) Algal plant body is a thallus, like many bryophytes (Hepaticeae and Anthocerotae).
(iii) In both, reserve food material is generally starch.
(iv) Both lack vascular tissues.
(v) Water is essential for fertilisation in algae as well as in bryophytes.

122. Fungus prefers to grow in:-
a) Warm and humid places b) Cold and humid places c) Warm and cold both
d) Warm, cold and humid places

123. Gymnosperms are also called soft wood spermatophytes because they lack:
a) Thick walled tracheids **b) Xylem fibres** c) Cambium d) Phloem fibres

Solution : -
Gymnosperms are called softwood spermatophytes because they do not have xylem vessels. Xylem consist of tracheids only with little fibres.

124. Which of the following options correctly identifies the plant shown in figure and the group it belongs to?



a) Marchantia - Liverwort **b) Sphagnum - Moss** c) Sphagnum - Liverwort d) Funaria - Moss

Solution : -
Plant shown in the figure is Sphagnum. It is a bryophyte, commonly called as peat moss.

125. Which of the following statements about Phaeophyceae is incorrect?
a) Vegetative reproduction occurs by fragmentation.
b) Asexual reproduction is by biflagellate pear-shaped zoospores.
c) In sexual reproduction, gametes are pyriform and bear 2 laterally attached flagella. **d) None of these**