



REVISION SHEET

SUBJECT: BIOLOGY

CLASS-XI

TERM 1

1 Marks Questions (MCQs)

1. Unicellular prokaryotes find their place in the five-kingdom classification as:

- (a) Monera (b) Protista (c) Fungi (d) None

2. The oldest prokaryote is/are:

- (a) Archaeobacteria (b) Cyanobacteria (c) Blue-green algae (d) None

3. Study of archaeobacteria is important because:

- (a) They are found in harsh conditions (b) They differ from other bacteria in cell wall composition (c) Both (a) and (b) (d) None

4. Single-celled eukaryotes are placed as _____ in the five-kingdom classification.

- (a) Monera (b) Protista (c) Fungi (d) None

5. Who is regarded as the "Father of Indian Phycology"?

- (a) Prof. M.O.P. Iyengar (b) Prof. R.N. Singh (c) Prof. R.R. Mishra (d) Prof. J.N. Mishra

6. Phycology is the study of:

- (a) Algae (b) Fungi (c) Bacteria (d) All of the above

7. "Artificial classification" by Linnaeus was not accurate because:

- (a) It gave equal weightage to vegetative and sexual modes of reproduction (b) It was based on superficial morphological characters like colour, shape, number of leaves (c) It did not consider internal structure like anatomy, embryology, phytochemistry (d) All of the above

8. Why does the vegetative mode of reproduction not weigh equally with the sexual mode of reproduction?

- (a) Vegetative propagation is common in the plant kingdom (b) Vegetative reproduction is less complicated than sexual reproduction (c) Environmental factors easily alter vegetative characters (d) None

9. Cytological classification relies on cytological information like:

- (a) Chromosome number (b) Chromosome behaviour (c) Chromosome structure (d) All of the above

10. Algae reproduce:

- (a) By fragmentation (b) Asexually by zoospore formation (c) Sexually (d) All of the above

11. Which among these is an alga?

- (a) Volvox (b) Ulothrix (c) Spirogyra (d) All of the above

12. Hydrocolloid-forming alga is:

- (a) Algin (Brown alga) (b) Carrageen (Red alga) (c) Sargassum (d) Both (a) and (b)

13. Chemical laboratories obtain agar from which alga?

- (a) Algin (Brown alga) (b) Carrageen (Red alga) (c) Sargassum (d) Gelidium

14. We classify algae based on:

- (a) Colour (b) Type of spore formation (c) Morphology (d) All of the above

15. The edible part of an apple is:

- (a) Mesocarp (b) Endocarp (c) Thalamus (d) Pericarp

16. Which type of root modification is found in carrots?

- (a) Tap root (b) Napiform (c) Conical (d) Fusiform

17. The arrangement of leaves on the stem is called:

- (a) Phyllotaxy (b) Venation (c) Placentation (d) Phyllode

18. A drupe fruit is characterised by:

- (a) Fleshy mesocarp and stony endocarp (b) Dry pericarp (c) Multiple seeds (d) Hard epicarp

19. The Casparian strip is found in:

- (a) Epidermis (b) Endodermis (c) Cortex (d) Pericycle

20. The conducting tissue in plants consists of:

- (a) Xylem and phloem (b) Xylem only (c) Phloem only (d) Cambium

21. In a monocot stem, vascular bundles are:

- (a) Open and scattered (b) Closed and scattered (c) Open and arranged in a ring (d) Closed and arranged in a ring

22. Which structures perform the function of mitochondria in bacteria?

- (a) Nucleoid (b) Ribosomes (c) Cell wall (d) Mesosomes

23. Choose the incorrect match:

- (a) Chloroplast — Thylakoid (b) Golgi bodies — Cristae (c) Mitochondria — Oxysome (d) Centriole — Microtubules

24. What is a tonoplast?

- (a) Outer membrane of mitochondria (b) Inner membrane of chloroplast (c) Membrane boundary of the vacuole of plant cells (d) Cell membrane of a plant cell

25. A fruit fly has 8 chromosomes (2n) in each of its body cells. What would be the number of chromosomes after the S phase of interphase in a cell?

- (a) 4 (b) 8 (c) 16 (d) 32

26. During the G1 phase of cell division:

- (a) RNA and proteins are synthesised (b) The cell grows in size (c) Decision for cell division occurs (d) All of these

27. Which pigment is responsible for capturing light energy in photosynthesis?

- (a) Chlorophyll-a (b) Xanthophyll (c) Carotene (d) Anthocyanin

28. In C4 plants, the first stable product of CO₂ fixation is:

- (a) PGA (b) PEP (c) OAA (d) RuBP

(Assertion-Reason)

For each question, choose the correct option: (a) Both A and R are true, and R is the correct explanation of A (b) Both A and R are true, but R is not the correct explanation of A (c) A is true, R is false (d) A is false, R is true

29.

Assertion (A): The Golgi apparatus mainly performs the function of packaging materials.

Reason (R): Materials to be packed, in the form of vesicles from the ER, fuse with the trans face of the Golgi apparatus.

30.

Assertion (A): DNA synthesis occurs in the G1 and G2 periods of the cell cycle.

Reason (R): During the G1 and G2 phases, the DNA content becomes double.

2 Marks Questions

31. What advantages does the five-kingdom classification have over the two-kingdom classification?

32. Who proposed the five-kingdom classification?

33. What is the basis of Whittaker's system of classification? What are the demerits of the five-kingdom classification?

34. Cyanobacteria and heterotrophic bacteria are very different from each other but fall under Eubacteria of kingdom Monera. Is this grouping justified?

35. Why is the natural system of classification better than the artificial system of classification?

36. Give an example of plants with: (a) Haplontic life cycle (b) Diplontic life cycle (c) Haplo-diplontic life cycle.

37. Cycas, one of the few living gymnosperms, is called the 'relic of the past'. Can you establish a phylogenetic relationship of Cycas with any other group of plants that justifies this statement?

38. How are the male and female gametophytes of pteridophytes and gymnosperms different from each other?

39. In which plant will you look for mycorrhiza and coralloid roots? Also explain what these terms mean.

40. Explain why sexual reproduction in angiosperms is said to take place through double fertilisation and triple

fusion. Draw a labelled diagram of the embryo sac to explain the phenomena.

41. Draw a labelled diagram of "Alternation of generation in Angiosperm".

42. Define placentation and name its types.

43. Differentiate between actinomorphic and zygomorphic flowers.

44. Name two examples each of tap roots and fibrous roots.

45. What is the difference between compound and simple leaves?

46. Differentiate between open and closed vascular bundles.

47. What is the function of the endodermis in roots?

48. Name the components of phloem.

49. What does "S" stand for in the 70S and 80S ribosome?

50. What is a mesosome in a prokaryotic cell? Mention the functions it performs.

3 Marks Questions

51. Explain different types of phyllotaxy with examples.

52. Describe the modifications of stem for storage and support.

53. Differentiate between hypogynous and epigynous flowers.

54. Explain any three types of placentation.

55. Describe the structure of a monocot root.

56. Explain the difference between dicot and monocot stems.

57. Write the functions of the following: (a) Centromere (b) Smooth ER (c) Centrioles.

58. Explain the role of chlorophyll-a in photosynthesis.

59. Write the equation for aerobic respiration.

60. Describe the role of gibberellins in plant growth.

4 Marks Questions (Case Study)

Case Study 1

The fungi constitute a unique kingdom of heterotrophic organisms showing great diversity in morphology and habitat. Some unicellular fungi, e.g., yeast, are used to make bread and beer. Other fungi cause diseases in plants and animals; wheat rust-causing *Puccinia* is an important example. Some are a source of antibiotics, e.g., *Penicillium*. Fungi are cosmopolitan and occur in air, water, soil, and on animals and plants. With the exception of yeasts (unicellular), fungi are filamentous, with bodies made of long, slender thread-like hyphae. The network of hyphae is called the mycelium. Some hyphae are continuous tubes filled with multinucleated cytoplasm -- these are coenocytic hyphae; others have septae/cross walls. The cell walls of fungi are composed of chitin and polysaccharides. Most fungi absorb soluble

organic matter from dead substrates (saprophytes); those depending on living organisms are parasites. They may also live as symbionts -- with algae as lichens, and with roots of higher plants as mycorrhiza. Reproduction can be vegetative (fragmentation, fission, budding), asexual (conidia, sporangiospores, zoospores), or sexual (oospores, ascospores, basidiospores).

61. _____ hyphae are without septa and filled with multinucleated cytoplasm.

- (a) Septate (b) Nucleated (c) Coenocytic (d) Both (a) and (c)

62. _____ is the only single-celled fungal organism.

- (a) Penicillium (b) Yeast (c) Mycorrhiza (d) Both (a) and (b)

63. What is saprophytic fungi?

64. Give reason: why are fungi referred to as cosmopolitan organisms?

65. Name the fungus responsible for the rusting disease in wheat plants.

Case Study 2

Gymnosperms are plants in which the ovules are not enclosed by any ovary wall and remain exposed, both before and after fertilisation. The seeds that develop post-fertilisation are naked. Gymnosperms include medium to tall trees and shrubs -- the giant redwood Sequoia is one of the tallest tree species. The roots are generally tap roots. Roots in some genera have fungal association in the form of mycorrhiza (Pinus), while in others (Cycas) small specialised coralloid roots are associated with N₂-fixing cyanobacteria. Leaves may be simple or compound; in Cycas the pinnate leaves persist for a few years. Gymnosperm leaves are well-adapted to withstand extremes of temperature, humidity, and wind -- in conifers the needle-like leaves reduce surface area, and thick cuticle with sunken stomata reduces water loss.

66. In gymnosperms, seeds that develop after fertilisation are _____.

- (a) Covered in ovary walls (b) Not covered in ovary walls (c) Covered in ovary sheath (d) None of the above

67. Identify the correct characteristics of Cycas: (1) Leaves pinnate for a few years (2) Small specialised coralloid roots present (3) Roots associated with nitrogen-fixing bacteria (4) Male and female cones on different plants.

- (a) Both 2 and 3 (b) Only 2 (c) 1, 2 and 3 (d) All of the above

68. Name the special type of root found in the Cycas tree.

69. Why are gymnosperms referred to as a heterosporous group of plants?

70. What is the reason behind the needle-like leaf adaptation in gymnosperms?

Case Study 3

71. A horticulturist is trying to identify a plant species. The plant has alternate leaves, actinomorphic flowers, and a drupe fruit. Based on morphology, identify possible plant families and justify.

72. A farmer notices that some plants in his field have swollen roots storing food. Explain the possible types of root modifications seen and their advantages.

73. In a botanical garden, a plant is observed to have seeds enclosed within a hard, stony covering inside a fleshy fruit. Identify the type of fruit and its possible advantages for seed dispersal.
74. A researcher compares phyllotaxy patterns in different plants. Suggest how this trait can help in maximising photosynthesis.

Case Study 4

A chloroplast is a membrane-bound organelle known as a plastid that conducts photosynthesis mostly in plant and algal cells. The photosynthetic pigment chlorophyll captures energy from sunlight, converts it, and stores it in the energy-storage molecules ATP and NADPH, while freeing oxygen from water in the cells. The ATP and NADPH are then used to make organic molecules from carbon dioxide in a process known as the Calvin cycle. Chloroplasts also carry out fatty acid synthesis, much amino acid synthesis, and the immune response in plants. The number of chloroplasts per cell varies from one, in unicellular algae, up to 100 in plants like Arabidopsis and wheat.

75. The ground material in the chloroplast is:
- (a) Matrix (b) Stroma (c) Lamellae (d) Thylakoid
76. When green tomato fruits turn red, then:
- (a) New chromoplasts are formed (b) Chloroplasts disintegrate and get converted into chromoplasts (c) Chromoplasts change to chloroplasts (d) None of these
77. In chloroplasts, the parallel layering of membranes is suited for:
- (a) Maximum exposure of enzymes (b) Maximum light absorption (c) Minimum light absorption so cells can maintain temperature (d) All of these

Case Study 5

Prokaryotic cells are represented by bacteria, blue-green algae, mycoplasma, and PPLO (Pleuro Pneumonia Like Organisms). They are generally smaller and multiply more rapidly than eukaryotic cells, and vary greatly in shape and size. The four basic shapes of bacteria are bacillus (rod-like), coccus (spherical), vibrio (comma-shaped), and spirillum (spiral). All prokaryotes have a cell wall surrounding the cell membrane except mycoplasma. The fluid matrix filling the cell is the cytoplasm; there is no well-defined nucleus, and the genetic material is naked, not enveloped by a nuclear membrane. In addition to the genomic DNA (the single chromosome/circular DNA), many bacteria have small circular DNA outside the genomic DNA, called plasmids, which confer unique phenotypic characters such as antibiotic resistance. No organelles like those in eukaryotes are found in prokaryotic cells except ribosomes. A specialised, differentiated form of cell membrane called the mesosome -- an infolding of the cell membrane -- is characteristic of prokaryotes.

78. _____ is the fluid matrix which fills the prokaryotic cell.
- (a) Cell sap (b) Cytoplasm (c) Water (d) Both (a) and (b)
79. Identify the incorrect statement: (1) In prokaryotic cells the nucleus is absent. (2) In prokaryotic cells genetic material appears naked. (3) In prokaryotic cells genetic material is not enveloped by a nuclear membrane. (4) Prokaryotic cells do not have a cell wall.

(a) Only 1 (b) Only 4 (c) Both 2 and 3 (d) All of the above

80. Give reason: why is the genetic material in a prokaryotic cell not enveloped in a nuclear membrane?

81. Define mesosome.

82. Give any two characteristics of prokaryotic cells.

83. List the shapes in which bacteria generally occur.

84. A plant kept in the dark for 48 hours is exposed to light in the presence of CO₂. Predict the changes in its photosynthetic rate and justify your answer.

5 Marks Questions

85. Draw diagrams to explain the structure of a bacteriophage and a TMV virus.

86. What are lichens, and what is their importance?

87. Classify fungi based on their mode of nutrition and reproduction.

88. Explain the phylogenetic system of classification.

89. Give a brief account of the various systems of classification. Which system do you consider more authentic?

90. Describe the phylogenetic classification system.

91. Explain the Krebs cycle with a neat diagram..

92. Write any four characteristic features of pteridophytes.

93. Bring out the major differences between monocotyledons and dicotyledons.

94. Mention the economic importance of algae.

95. Give a comparative account of (a) the nature of the cell wall and (b) the characteristics of flagella among the three classes of algae.

96. In which plant will you look for mycorrhiza and coralloid roots? Also explain what these terms mean.

97. What is meant by: (a) Cytotaxonomy (b) Chemotaxonomy (c) Numerical taxonomy (d) Heterosporous ferns?

98. Write the characteristic events that take place in anaphase of mitosis.

99. Describe the various types of inflorescence with examples.

100. Discuss the fruit types in detail with suitable examples.