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Questions:

Case Study Questions

1. A student observed polluted water bodies. He found green gelatinous organisms which spread the all over the water. He studied some of these organisms under microscope and discussed with his teacher.
   (i) What are these green gelatinous organism?
   (ii) What is heterocysts?
   (ii) Write any two features of the cyanobacteria.
   (iv) Write any one similarity between cyanobacteria and plants.
   (v) What is the other name of cyanobacteria?

2. Read the following passage and answer the questions that follow
   Viruses are non-cellular organisms that are characterised by an inert crystalline structure surrounding the genetic material. These are obligate parasites and do not have a biosynthetic machinery.Therefore, they use host machinery to replicate themselves.
   Viruses are ultramicroscopic nucleoprotein entities having variable size and shape. The basicstructure of virus is composed of envelope, capsid and nucleoid. Based on the type of genetic mateial, viruses are classified Deoxyvira and Ribovira.
   (i) Name the viruses which do not contain DNA
   (ii) What is the features of virus capsid?
   (iii) Name a polyhedral-shaped virus.
   (iv) Name a virus that affects plants.

3. Phycomycetes – Members of phycomycetes are found in aquatic habitats and on decaying wood in moist and damp places or as obligate parasites on plants. The mycelium is aseptate and coenocytic. Asexual reproduction takes place by zoospores (motile) or by aplanospores (non-motile). These spores are endogenously produced in sporangium. A zygospore is formed by fusion of two gametes. These gametes are similar in morphology (isogamous) or dissimilar (anisogamous or oogamous). Some common examples are Mucor, Rhizopus (the bread mould) and Albugo (the parasitic fungi on mustard).
   Ascomycetes – Commonly known as sac-fungi, the ascomycetes are mostly multicellular, e.g., Penicillium, or rarely unicellular, e.g., yeast (Saccharomyces). They are saprophytic, decomposers, parasitic or coprophilous (growing on dung). Mycelium is branched and septate. The asexual spores are conidia produced exogenously on the special mycelium called conidiophores. Conidia on germination produce mycelium. Sexual spores are called ascospores which are produced endogenously in sac like asci (singular ascus). These asci are arranged in different types of fruiting bodies called ascocarps. Some examples are Aspergillus, Claviceps and Neurospora. Neurospora is used extensively in biochemical and genetic work. Many members like morels and truffles are edible and are considered delicacies.
   Basidiomycetes –Commonly known forms of basidiomycetes are mushrooms, bracket fungi or puffballs. They grow in soil, on logs and tree stumps and in living plant bodies as parasites, e.g., rusts and smuts. The mycelium is branched and septate. The asexual spores are generally not found, but vegetative reproduction by fragmentation is common. The sex organs are absent, but plasmogamy is brought about by fusion of two vegetative or somatic cells of different strains or genotypes. The resultant structure is dikaryotic which ultimately gives rise to basidium. Karyogamy and meiosis take place in the basidium producing four basidiospores. The basidiospores are exogenously produced on the basidium (pl.: basidia). The basidia are arranged in fruiting bodies called basidiocarps. Some common members are Agaricus (mushroom), Ustilago (smut) and Puccinia (rust fungus).
   (1) The bread mould fungi belongs to _____
   (a) Basidiomycetes
   (b) Phycomycetes
   (c) Ascomycetes
   (d) Deuteromycetes
   (2) Ascomycetes fungi are characterised by presence of _____.
   (a) Presence of asci
   (b) Presence of Basidium
   (c) Mycelium without septa
   (d) Both a and c
   (3) What is mean by anisogamousgametes?
   (4) Name the fungi which is commonly known as smut fungi?
   (5) Give reason – why ascomycetes are termed as sac fungi?

5 Marks

4. What is three domain system? Who introduced it? Name these domains and their salient features.
5. What are the benefits of a five kingdom classification over a two kingdom classification?
6. Describe various classes of fungi.Give details of their key characteristics.
7. What is the need of a classification system in biology? How did different classification systems develop over a period of time?
8. Distinguish between kingdoms - Plantae and Animalia on the basis of following :
   (1) Locomotion
   (ii) Nutrition
   (iii) Growth
   (iv) Response to stimuli
   (v) Egestion

3 Marks

9. What do the terms phycobiont and mycobiont signify?
10. Mention two harmful effects of cyanobacteria.
11. What is the special feature of Archaebacteria? How do these obtain food? How are they able to tolerate high temperatures as well as acidity?
12. Describe briefly the four major groups of Protozoa.
13. What is the difference between prokaryotes and eukaryotes?
14. Who was the first to attempt a more scientific basis for classification of living organisms? How did he classify plants and animals?
15. Bacteria as a group show the most extensive metabolic diversity. Substantiate the statement with reference to nutrition.

16. Biological classificatian refers to the scientific arrangement of organisms into a hierarchial series of groups and sub-groups based on certain parameters. What objectives does classification carry?
17. After kingdom - Fungi was made, what were the criteria used by scientist to classify fungi?
18. Cyanobacteria and heterotrophic bacteria have been clubbed together in Eubacteria of Kingdom Monera as per the five kingdom classification even though the two are different vastly from each other. Is this grouping of the two types of taxa in the same kingdorn justified? If so, why?
19. What are the main differences between Ascomycetes and Basidiomycetes?
20. Explain the physiological relationships between the algal and fungal components of lichen.

2 Marks

21. Give the name of the classes of Kingdom - Plantae.
22. What is the body organisation in members of kingdom-Animalia?
23. How the saprotrophic Basidiomycetes are able to decompose plant matter?
24. Give the name of a fungus used in biological control of other fungi. How is it harmful to humans?
25. How are viroids different from viruses?
26. Who proposed three kingdom system of classification? Give the name of new kingdom included in this.
27. What are the characteristic features of Euglenoids?
28. Why were bacteria, cyanobacteria and fungi included in plant kingdom, in the earlier classification systems?
29. Name the substance present in the cell wall of diatoms that makes them hard and indestructible.
30. In the five-kingdom classification of Whittaker, some acellular organisms are not included. What are these organisms?
31. (a) In a few fungi, during sexual reproduction, the two haploid cells do not immediately result in a diploid (2n) cell formation. Name this intervening condition and phase of the fungus.
    (b) Name two symbiotic associations of fungi.
32. A virus is considered as a living organism and an obligate parasite when inside a host cell. But virus is not classified with bacteria or fungi. What are the characters of virus that are similar to non-living objects?

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QUESTION BANK 365