Important Questions for Class 11

Biology

Chapter 2 - Biological Classification

Very Short Answer Questions **1 Mark**

1. Nostoc and Anabaena have specialised cells called heterocysts. What is the function of these cells?
Ans: Assist in the nitrogen fixation process.

2. Which group comprises single celled eukaryotes only.
Ans: Kingdom Protista comprises single celled eukaryotes.

3. Which organisms are the chief producers in oceans?
Ans: Diatoms are the chief producers in oceans.

4. Name the fungus which causes disease in wheat (i)rust (ii) Smut.
Ans: (i) Puccinia, (ii) Ustilago are the fungus which causes disease in wheat.

5. Which ascomycetes has been used extensively in biochemical and genetic work.
Ans: Neurospora used in biochemical and genetic work.

6. Who introduced the five kingdom classification of organisms?
Ans: R.H. Whittaker (1969) introduced the five kingdoms.

7. To which kingdom the multicellular decomposers belong?
Ans: Kingdom fungi - multicellular decomposers.

8. Expand PPLO.
Ans: Pleuropneumonia like organisms stands for PPLO.

9. Name the five kingdoms in which the organisms are grouped together?
Ans: Monera, protista, fungi, plantae & animalia -5 kingdoms

10. Which organisms are known as "Jokers of plant kingdom"

Ans: 2 Mycoplasma

11. In which class of fungi sexual reproduction does not occur?
Ans: Deuteromycetes - sexual reproduction doesnot occur .

12. Who is known as "Father of classification"?
Ans: Carolus Linnaeus - Father of classification

13. Name the fungus from which LSD drug is obtained?
Ans: Claviceps purpurea is the name of fungus.

14. It is advised to grow one pulse crop in between two main crops in the same field .Why?
Ans: To increase the fertility of soil so it is advised to grow one pulse crop in between two main crops in the same field .

15. Define experimental taxonomy?
Ans: It is the process of identifying evolutionary units within a species by determining their genetic origin through experimentation.

16. Name the fungus that causes the rust of wheat?
Ans: Puccinia graminis tritici is the fungus that causes the rust of wheat.

17. What are distributed organisms which have not been included under any kingdom?
Ans: Virus & Viroids has not been included in any kingdom.

Short Answer Questions **2 Marks**

1. How are alt bacteria classified on the basis of their shapes?
Ans: Coccus (red-shaped Bacillus), Bacillus (red-shaped Bacillus) (spherical). Spirillum (comma-shaped) and Vibrium (spiral shaped).

2. What is the mode of reproduction in bacteria?
Ans: Mostly by fission; spore production in difficult conditions. By transferring DNA from one person to another, sexual reproduction is possible.

3. Why are red tides caused and why are they harmful?

Ans: Dinoflagellates such as Gonyaulax have a rapid multiplication rate. They are dangerous because they emit chemicals that destroy aquatic animals.

4. Viruses and viroids differ in structure and the diseases they cause. How?
Ans: Viruses can have either RNA or DNA molecules enclosed in a protein coat, whereas viroids are free RNA molecules with a low molecular weight and no protein coat. Viroids are smaller than viruses in size. Viruses infect only plants, but viroids infect all living things. Viroids lack a protein coat, whereas viruses have a protein covering or coat called capsid that surrounds the genetic material.

5. Which class of Kingdom fungi has both unicellular as well as multicellular members?
When is a fungus called coprophilous?
Ans: On dung, Ascomycetes Yea-n (Unicellular), Pen cilium (Multicellular), and Coprophilous moans fungus flourish.

6. What is the basis of modern classification?
Ans: Modern taxonomy is founded on the following principles:
(i) Relationship between evolution.
(ii) The genetic codes of different species are similar.
(iii) Characteristics of the environment.

7.Give one example of a fungus as a source of antibiotics?
Ans: Penicillium is the genus from which the antibiotic penicillin is derived. Green and blue moulds are examples of Penicillium. The bacteria Penicillium chrysogenum is used to make the antibiotic penicillin.

8.How are viroids different from viruses?
Ans:

VIROIDS	**VIRUSES**
Viriods are smaller than viruses & lack protein coat.	Viruses are non-cellular organisms having a protein coat.
Genetic material is free RNA	Genetic material is RNA or DNA.

9.Explain phylogenetic system of classification?

Ans: The phylogenetic system of classification is based on species' evolutionary relationships. It reflects the fundamental interdependence of creatures. It is neither static nor dynamic.

Its origins are incomplete fossil records due to the difficulty of formation, exposure, discovery, and investigation.

10. What is the basis of Whittaker's system of classification?

Ans: Whittaker based his classification on following three criteria :

(i) Structure of cell i-e. prokaryotic Vs. Eukaryotic organization.

(ii) Unicellular Vs. multicellular organisms

(iii) Different modes of nutrition - parasitic, autotrophic or heterotrophic

11.Find out what do the terms "algal bloom" & "red tides" signify?

Ans:

(I)Algal bloom is a term used to describe the rapid growth of algae in a water body as a result of nutrient enrichment.

(II) Crimson dinoflagellates, such as Gonyaulux, multiply rapidly, making the sea appear red. It's known as red tide.

12. Why are some fungi grouped under "fungi imperfecti"?

Ans: Asexual reproduction is widespread in fungus. A portion of the mycelium is fragmented into minute pieces that grow into new mycelium, however sexual reproduction occurs in some fungus. Fungi imperfecti refers to a group of fungi that reproduces entirely by asexual spores rather than sexual spores.

13.Explain "Numerical taxonomy".

Ans: The employment of technology approaches in taxonomy is referred to as numerical taxonomy. The characters that can be seen are investigated. For computers, they are given numbers and codes like (+) and (-). (-). The computer-processed data assigns a score to each taxon based on the number of unit characters they possess.

14.What are the demerits of five kingdom classification?

Ans: Below given are the demerits of five kingdom classification:-

(i)Autotrophic and heterotrophic organisms are included in the kingdom monera monera & protista.

(ii)Phylogenetic linkages in lower organisms are not well-defined or well-defined.

(ii)From protists, multicellular groups have emerged.

15.Give scientific name of species of fungus:
(a) Produces a plant disease.
Ans: Phytophthora infestans, which causes potato late blight.

(b) Is edible
Ans: Agaricus campestris - A mushroom that can be eaten.

(c) A source of antibiotic
Ans: Penicillium notatum is an antibiotic-producing fungus.

(d) Used in the manufacture of ethanol.
Ans: Saccharomyces cerevisiae is a yeast that is used to make ethanol.

16.Compare salient features of monera & protista.
Ans:

Monera	**Protista**
It includes unicellular bacteria, archaebacteria, cyanobacteria	It includes photosynthetic algae, slime moulds, protozoans, etc.
These are prokaryotic, photosynthetic & some heterotrophs	These are eukaryotic unicellular, autotrophy, or saprophytes or parasites.

17.State an economically important use of
(i) Heterotrophic bacteria.
Ans: Heterotrophic bacteria are mostly decomposers. Some are beneficial in the production of curd milk, nitrogen fixation, and other processes, whereas others are pathogens that cause sickness**.**

(ii) Archaebacteria.
Ans: production.Archaebacteria, bacteria that make biogas from cow dung, for example.

18.Write the importance of classification of organisms.
Ans. (i)With over millions of plants known today, classification is essential for systematic study of living beings.

(ii) All organisms do not live in the same place.
(iii) Studying all creatures at the same time is impossible.
(iv)It aids in the understanding of evolutionary links between various groups.
(v)It makes each creature easier to distinguish and identify.

19. What are insectivorous plants? Give an example.
Ans: Carnivorous plants are insectivorous plants. They catch insects to supplement nitrogen requirements in the diet. These are green plants that have had their leaves modified to trap insects in order to overcome a nitrogen shortage. For example, the pitcher plant (Nepenthes) has had its leaf blade modified into a pitcher.

Short Answer Questions **3 Marks**

1. Who gave live Kingdom classification? What was the criteria used for such classification?
Ans: Whittaker, R., and Whittaker, H. Classification criteria Phylogenetic relationships, cell structure, thallus arrangement, method of nourishment, reproduction.

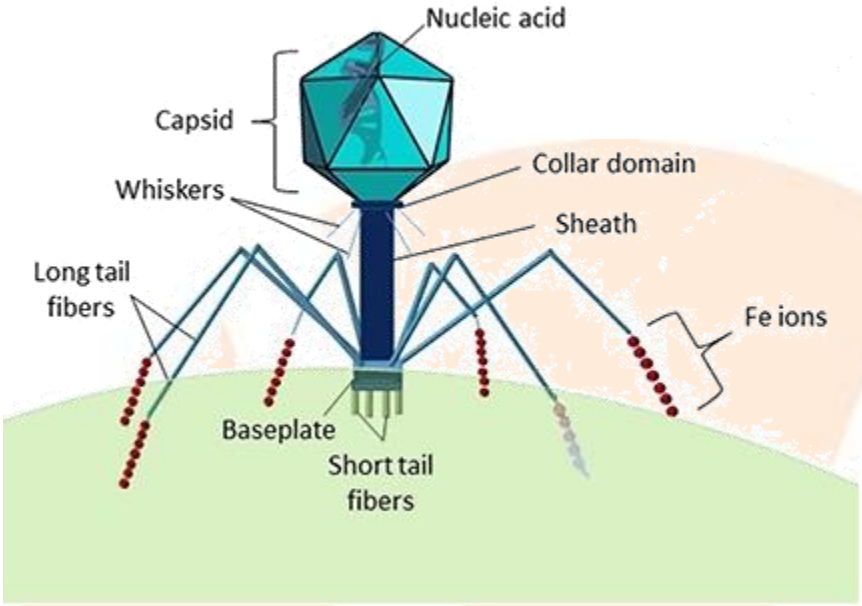
2. What is the sexual cycle in kingdom fungi?
Ans: The steps are as follows:
(i)Plasmogamy fusion of two motile or nonmotile gametes protoplasm.
(ii)Karyogamy is the fusion of two nuclei.
(iii) Zygotic Meiosis, which results in the formation of haploid spores.
(iv) Dikaryophase in ascomycetes and basidiomycetes, where two nuclei per cc (dikaryon) are found before karyogamy.

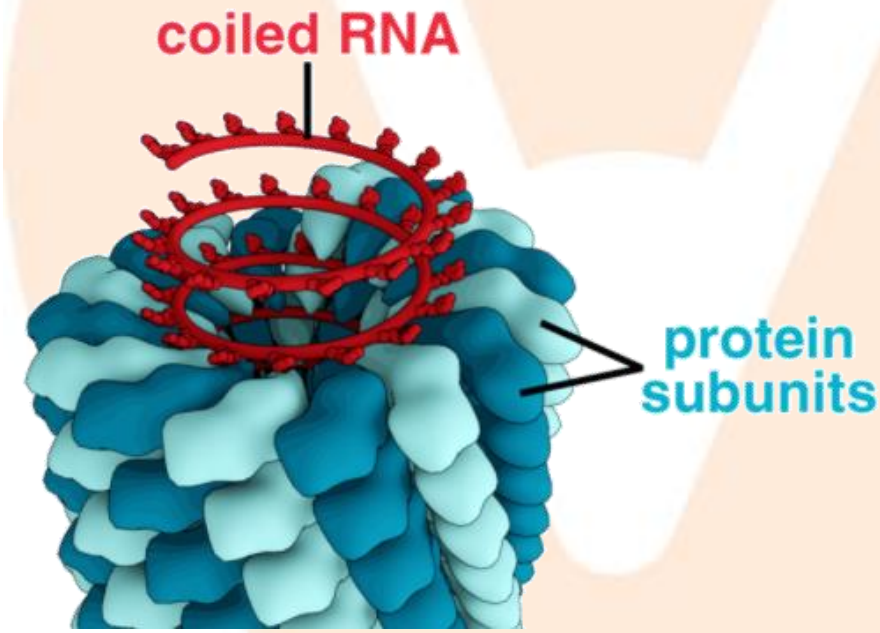
3. Some symbiotic organisms are very good pollution indicators and are composed of a chlorophyll-us and a non- chlorophyll-us member. Describe them.
Ans: Lichen is a symbiotic connection between algae and fungi that results in the formation of lichen. Algae chlorophyceae and fungi ascomycetes are the most common. Because they only grow in clean places, they operate as pollution indicators because they do not grow in polluted areas. For instance, consider the case of industrial melanism.

4. Explain sexual reproduction in bacteria?

Ans: Bacteria can not reproduce sexually, yet they exhibit genetic recombination in three ways:
(i) Conjugation: Lederberg and Tatum discovered it. The presence of a plasmid called F-factor in cells identifies the donor or male call. The donor cell has hollow cylindrical sex Pilli that adhere to the recipient bacteria. With the help of sex pilli, the donor and receiver make physical contact. The recipient cell receives a plasmid or a plant of donor DNA.
(ii) Griffith was the one who discovered it. It includes the death of a bacterial donor cell, which causes its DNA to be released into the external media, where it is broken and integrated into metabolically active cells. Recombination occurs when a recipient cell incorporates donor DNA and expresses all of its characteristics alongside those of the donor cell.
(iii) Zinder and Lederberg were the first to discover transduction. A virus is used to deliver donor genes to the recipient. A phage promotes bacterial lysis and integrates bacterial genes into phages before being released and infecting additional bacterial genes.

5. Discuss the salient features of viruses with the help of a diagram?
Ans: Viruses have the following characteristics:
(i)They are a fraction of the size of bacteria.
(ii)They can be filtered
(iii) They can reproduce in host cells by utilising the host cell's enzymes and metabolic machinery.
(iv)Their genetic substance is DNA/RNA.
(v)These organisms are obligate parasites, self-replicating, and non-cellular.
(vi) They have a capsid protein covering that protects nucleic acid.
(vii) They produce plant diseases such as mosaic, leaf curling, leaf role, vein clearing, and so on.





6.Distinguish between bacteria & cyanobacteria?

Ans:

BACTERIA	**CYANOBACTERIA**
cells are comparatively smaller	Cells are comparatively larger .
They have lesser structural elaboration	They exhibit a high degree of

	morphological complexity and structural elaboration.
Most bacteria have flagella	Do Not have flagella.
Are autotrophic & heterotrophic both	Are Autotrophic.
Possess bacteriochlorophyll	Possess chlorophyll.
Reserve food is glycogen.	Reserve food is starch like cyanophycean starch.

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

Ans: Natural selection studies evolutionary tendencies and phylogeny using all available data, including fossils, in addition to bringing out natural links. It is superior to an artificial classification system for the following reasons:

(i) This method reveals organisms' natural relationships.

(ii) Only connected organisations of the group are included here.

(iii)It prevents the mixing of unrelated organisms.

(iv)It depicts the evolutionary relationships and origins of various taxa.

8. Give a comparative account of classes of kingdom fungi on the basis of mode of nutrition & mode of reproduction.

Ans:

PHYCOMYCETES	**ASCOMYCETES**	**BASIDIOMYCETES**	**DEUTEROMYCETES**
They are obligate parasites on plants .	They are saprophytic or parasitic.	They are parasites.	They are saprophytic or parasites.
The spores are produced in sporangia. Asexual spores are oospores or zygospores formed	Asexual spores are ascospores. Asci are arranged in ascocarps.	Basidia are arranged in basidiocarp.	Asexual spores are conidia.

by union of gametes.			
Sexual spores are zoospores or aplanospores.	Sexual spores are ascospores produced in ascus.	Plasmogamy occurs by fusion of somatic & vegetative cells.	Sexual reproduction is absent in them.

9. Discuss different systems of classification briefly.

Ans: There are three types of fungus.

(i)Phycomycetes: Their mycelium is multinucleated and aseptate. Asexual reproduction is accomplished using aplanospores, while sexual reproduction is accomplished through isogamy or oogamy. These can be found in wet or damp areas, such as mucor Albugo.

(ii)Ascomycetes : They are septate unicellular or multicellular mycelium. Conidia are asexual spores that develop in chains. Ascospores, which are carried in a cup-shaped structure called asci, are used for sexual reproduction in yeasts like Penicillium and Aspergillus.

(iii)Basidiomycetes: These fungi are known as club fungus because of the basidium, which is a club-shaped terminal of mycelium. They have septate mycelium and produce basidiospores, which are asexual spores. For example, mushroom smut

10. What are the different groups of fungi?

Ans: There are several classification systems:

(i) Artificial classification: It simply considers a few easily observable traits and ignores anatomical linkages.

(ii) Natural classification: It is based on organisms' natural affinities. It makes use of both external and internal characteristics.

(iii)Phylogenetic classification: This classification is based on evolutionary relationships between organisms, i.e., organisms belonging to the same group have a common ancestor.

(iv)Phenotypic classification: To prevent problems establishing evolutionary relationships, various criteria and procedures are used to classify organisms.