CBSE Class 11 Biology

Important Questions

Chapter 2

Biological Classification

1 Marks Questions

1. Nostoc and Anabaena have specialised cells ea11e heterocyst's. What is the function of these cells.

Ans: Help in nitrogen fixation.

2. Which group comprises of single celled eukaryotes only.

Ans: Kingdom Protista.

3. Which organisms are the chief producers in oceans ?

Ans: Diatoms

4. Name the fungus which causes disease in wheat (I)rust (ii) Smut.

Ans:(i) Puccinia, (ii) Ustilago

5. Which Ascomycetes has been used extensively in biochemical and genetic work.

Ans: Neurospora.

6.Who introduced the five kingdom classification of organisms?

Ans.R.H. Whittaker (1969)

7.To which kingdom the multicellular decomposers belong?

Ans. Kingdom fungi

8.Expand PPLO.

Ans: Pleuropneumonia like organisms.

9.Name the five kingdoms in which the organisms are grouped together?

Ans: Monera, protista, fungi, plantae & animalia.

10.Which organisms are known as “Jokers of plant kingdom”

Ans.2Mycoplasma

11.In which class of fungi sexual reproduction does not occur?

Ans. Deuteromycetes

12.Who is known as “Father of classification”?

Ans: Carolus Linnaeus

13.Name the fungus from which LSD drug is obtained?

Ans.claviceps purpurea.

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

15.Define experimental taxonomy?

Ans: It is the identification of evolutionary units within species by experimentally determining their genetical origin

16.Name the fungus causes the rust of wheat?

Ans. Peccinia graminis tritici.

17What are distributed organisms which have not been included under any kingdom?

Ans. Virus & Viriods

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2 Marks Questions

1.How alt bacteria elassified on the basis of (heir shapes?

Ans: Bacillus (red-shaped), Coccus (spherical). Vibrium (comma shaped) and Spirillum (spiral shaped).

2.What is the mode of reproduction in bacteria.

Ans: Mainly by fission; Production of spores in unfavorable conditions. Sexual reproduction by DNA transfer.

3.Why we red rides caused and why are they harmful?

Ans: Rapid multiplication of dinoflagellates like Gonyaulax. Harmful as they re lease toxins which kill marine animals.

4.Viruses and viroids differ in structure and the diseases they cause. How?

Ans: Refer Points U, Remember'

5.Which class of Kingdom fungi has both unicellular as well as multicellular members? When is a fungus called coprophilous?

Ans: Ascomycetes Yea-n (Unicellular), Pen cilium (Multicellular),Coprophil- ous moans fungi which grow on dung.

6.What is the basis of modern classification?

Ans: Modern taxonomy is based on :-

(i) Evolutionary relationship.

(ii) The similarities in the genetic codes of species.

(iii) Ecological characters.

7.Give one example of a fungus as a soure of antibiotics?

Ans: Penicillium is the genus which is the source of an antibiotic penicillin. Penicillium is known as green & blue moulds. Penicillium chryosogenum is utilized for production of antibiotic penicillin.

8.How are viroids different from viruses?

Ans:

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

9.Explain phylogenetic system of classification?

Ans: phylogenetic system of classification is based on evolutionary relationships of organisms. It reflects true relationship between organisms. It is not static but not dynamic. Its sources are fossils records that are never complete due to difficulty in formation, exposure, discovery & study.

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. multi cellular 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 refers to the excessive growth of algae in water body due to enrichment of excessive nutrients in it.

(ii) The red dinoflagellates undergo rapid multiplication eg. Gonyaulux which make the sea appear red. It is called red tide.

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

Ans: The fungi commonly reproduce asexually. A part of mycelium is detached by fragmentation into small pieces which grow into new mycelium but in some fungi sexual reproduction also takes place. There is a group of fungi which reproduces completely by asexual spores & not by sexual spores so they are grouped under fungi imperfecti.

13.Explain "Numerical taxonomy".

Ans: Numerical taxonomy refers to use of technological methods in taxonomy. The observable characters are studied. The number & codes are assigned to them for computer like (+) & (-). The date processed by computer scores the taxa as per number of unit characters possessed by them.

14.What are the demerits of five kingdom classification?

Ans:

(i) Kingdom monera & protista include autotrophic & heterotrophic organisms.

(ii) Phylogenetic relationships in lower organisms are not specific & clear.

(iii) Multicellular groups have evolved from the protists.

15.Give scientific name of species of fungus:-

(a) Produces a plant disease.

(b) Is edible

(c) A source of antibiotic

(d) Used in manufacture of ethanol.

Ans:

(i) Phytophthora infestans – causes late blight of potato

(ii) Agaricus campestris – Edible mushroom.

(iii) Penicillium notatum – Produces antibiotic Penicillin

(iv) Sacchromyces cerevisae – used in production of ethanol.

16.Compare salient features of monera & protista.

Ans:

MONERA	**PROTISTA**
i) It includes unicellular bacteria, achaebacteria, cyanobacteria	i) It includes photosynthetic algae, slime moulds, protozoan etc.
ii) They are prokaryotic, photosynthetic &some heterotrophs	ii) These are eukaryotic unicellular, autotrophy or saprophytes or parasites

17.State an economically important use of

(i) Heterotrophic bacteria.

(ii) Archaebacteria.

Ans:

(i) Heterotrophic bacteria are decomposers mostly. Some are helpful to make curd milk, fixing nitrogen etc while some are pathogens & cause diseases.

(ii) Archaebacteria, bacteria include methanogens that produce biogas from cow dung etc.

18.Write the importance of classification of organism.

Ans:

(i) It is essential for systematic study of living beings to classify them as more than millions of plants are known today

(ii) All types of organisms do not occur on same locality

(iii) It is not possible to study all organisms at one time.

(iv) It helps in knowing evolutionary relationships between different groups

(v) It makes easier to recognize & identify each organism.

19. What are insectivorous plants? Give an example.

Ans: Insectivorous plants are carnivorous plants. They trap insects to supplement nutritional requirement of nitrogen. These are green plants & their leaves are modified to trap insects to overcome shortage of nitrogen eg. in pitcher plant (Nepenthes) leaf blade is modified into a pitcher.

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3 Marks Questions

1. Who gave live Kingdom classification? What was the criteria used for such classification?

Ans:R, H Whittaker Criteria for classification Cell structure, thallus organization, mode of nutrition, reproduction and phylogenetic relationships.

2. What are the s m the sexual cycle in kingdom fungi.

Ans:The steps ale **(i)** Plasmogamy fusion oc protoplasm of Iwo motile or non motile gametes.

(ii) Kayo gamy; fusion o two nuclei.

(iii) Zygotic Meiosis to form haploid spores.

(iv) Dikaryophase in ascomycetes and basidiomycetes where before karyo gamy two nuclei per cc (dikaryou) are found.

3. Some symbiotic organisms arc very good pollution indicators and compo of a chlorophyll us and a non- chlorophyll-us member Describe them.

Ans: Lichens. Refer Points to Remember'

4.Explain sexual reproduction in bacteria?

Ans. Bacteria do not have true sexual reproduction but they show genetic recombination by three ways:-

(i) Conjugation:- It was discovered by Lederberg & Tatum. The donor or male call is identified by the presence of plasmid called F- factor in cells. Donor cell bears cylindrical hollow sex

Pilli for attachment to recipient bacterium. Donor & recipient come in physical contact with the help of sex pilli. Plasmid or plant of donor DNA is transferred into recipient cell.

(ii) Transformation :- It was discovered by Griffith. It includes death of bacterial donor cell resulting in release of its DNA into external medium DNA gets fragmented & gets incorporated into metabolically active cells. Recipient cell after incorporation of donor DNA is known as recombination that expresses all its character together with character of donor cell.

Transduction :- It was discovered by Zinder & Lederberg. Donor genes are transferred into recipient all by a virus. A phage causes lysis of bacterium & incorporates bacterial genes into phages then is liberated & they infect new bacterial genes.

5.Discuss the salient features of viruses with the help of diagram?

Ans. Features of viruses:-

(i) They are smaller then bacteria.

(ii) They can be filtered

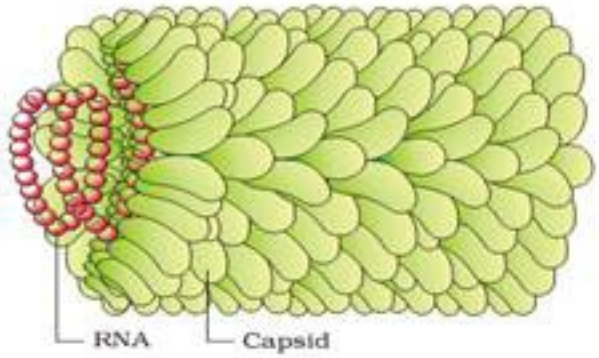
(iii) They are able to reproduce in host cell by using enzymes & metabolic machinery of host cell

(iv)DNA/RNA is their genetic material

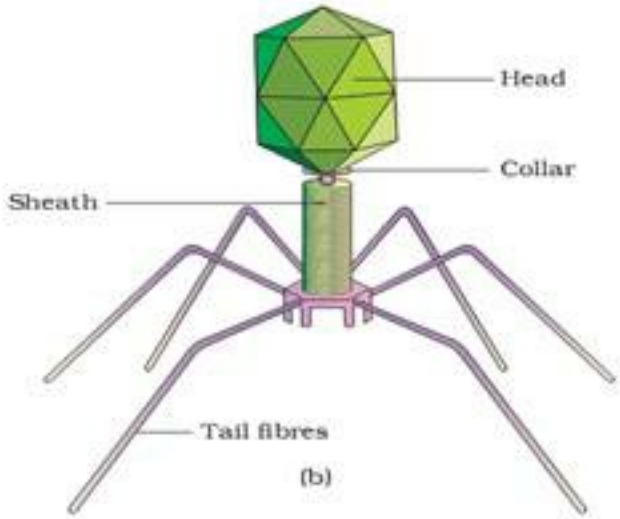
(v) These are obligate parasites, self replicating & non – cellular organisms.

(vi) They have protein coat called capsid that protects nucleic acid.

(vii) They cause disease in plants like mosaic, leaf curling, leaf role, vein clearing etc.



(a)



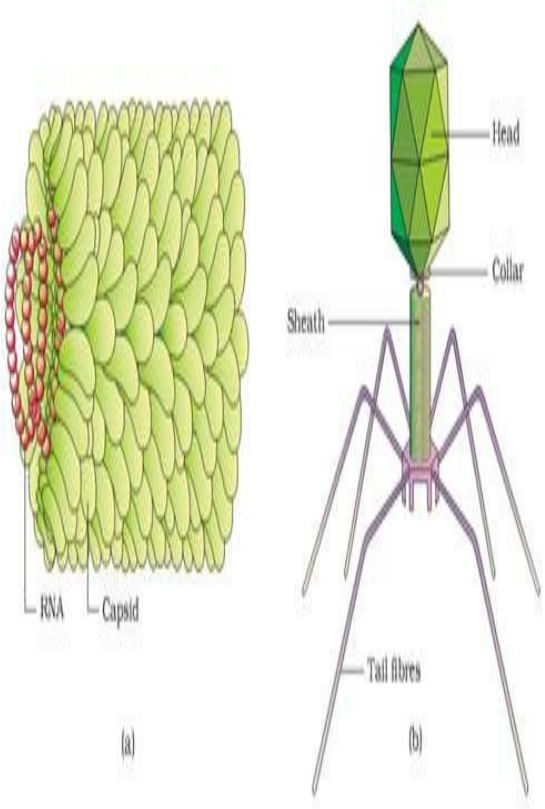
(b)

6.Distinguish between bacteria & cyanobacteria?

Ans.

BACTERIA	**CYANOBACTERIA**
i) cells are comparatively smaller	i) Cells are comparatively larger.
ii) They have lesser structural elaboration	ii) They exhibit high degree of morphological complexity & structural elaboration.
iii) Most bacteria have flagella	iii) Do not have flagella.
iv) Are autotrophic & heterotrophic both	iv) Are autotrophic.
v) Possess bacteriochlorophyll	v) Possess chlorophyll.
vi) Reserve food is glycogen	vi) reserve food is starch like cyanophycean starch

7.Describe the salient features of protists?



Ans.

(i) They are single celled colonial filamentous eukaryotes.

(ii) They grow in humid & moist environment.

(iii) Some are photosynthetic some are not.

(iv) Some forms are like plants & some like animals.

(v) Contain membrane bound organelles.

(vi) Protozoan's are unicellular heterotrophic

(viii) Examples- protozoan's, slime moulds, Euglenoid, diatoms, dinoflagellate

8.Why is natural system of classification better then artificial system of classification?

Ans. Natural selection not only brings out natural relationships but also studies evolutionary tendencies & phylogeny with help of all available data including fossils. It is better than

artificial system of classification due to following reasons:-

(i) This system brings out natural relationships amongst organisms.

(ii) This places only related organizations of group.

(iii) It avoids coming together of unrelated organisms.

(iv) It shows phylogenetic relationships & origin of different taxa.

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

Ans.

PHYCOMYCETES	**ASCOMYCETES**	**BASIDIOMYCETES**	**DEUTEROMYCETES**
(i) They are obligate parasites on plants	They are saprophytic or parasitic	They are pasites	They are saprophytes or parasites
(ii) The spores are produced in sporangia. Asexual spores are oospores or zygospores formed by union of gametes.	Asexual spores are ascospores. Asci are arranged in ascocarps	Basidia are arranged in basidiocarp.	Asexual spores are conidia
(iii) Sexual spores are zoospores or aplanospores	Sexual spores are ascospores produced in ascus.	Plasogamy occur by fusion of somatic & vegetative cells	Sexual reproduction is absent in them.

10.Discuss different systems of classification briefly.

Ans. Three different groups of fungi are

(i) Phycomycetes :- They have multinucleated, aseptate mycelium. Asexual reproduction occurs by aplanospores & sexual reproduction occurs by isogamy or oogamy. These are found in water or damp places eg. mucor Albugo etc.

(ii) Ascomycetes:- They are unicellular or multicellular mycelium which is septate. Asexual spores formed in chains are called conidia. Sexual reproduction occurs by ascospores beared in cup shaped structure called asci eg. yeast penicillium, Aspergillus.

(iii) Basidiomycetes :- They are called club fungi due to club- shaped end of mycelium called basidium. They have septate mycelium and bears asexual spores basidiospores. Eg mushroom smut rust.

11.What are the different groups of fungi?

Ans. Different systems of classification are:-

(i) Artificial classification- It takes into account easily observable few characteristics only & not anatomical relationships.

(ii) Natural classification- It relies on natural affinities among organisms. It employs external & internal both features.

(iii) Phylogenetic classification:- It is based upon evolutionary relationships among the organisms i-e. Organism belonging to same group have common ancestory.

(iv) Phenotypic classification :-additional criteria & methodologies are employed to classify organisms to avoid problem establishing evolutionary relationship.