BYJU'S Home Learning Program

Topic covered:

- **Biological Classification (Session 2) - NEET**

Worksheet

1. Match the columns.

	Column I		Column II
I.	Chrysophytes	A.	*Paramoecium*
II.	Dinoflagellates	B.	*Euglena*
III.	Euglenoids	C.	*Gonyaulax*
IV.	Protozoans	D.	Diatoms

a. I-D, II-C, III-B, IV-A
b. I-B, II-C, III-A, IV-D
c. I-B, II-D, III-C, IV-A
d. I-D, II-B, III-C, IV-A

2. Which one among the following does not belong to Monera?
   a. Slime molds
   b. Mycoplasma
   c. Eubacteria
   d. Archaebacteria

3. Which of the following is the wrong pair?
   a. Spherical bacteria - Coccus
   b. Rod shaped bacteria - Bacillus
   c. T shaped bacteria -Vibrium
   d. Spiral bacteria - Spirillum

4. Biogas is produced by
   a. eubacteria
   b. archaebacteria
   c. cyanobacteria
   d. mycoplasma

5. Which of the following is not correct?
   a. Cyanobacteria are photosynthetic prokaryotes
   b. Heterocysts are special cells in certain cyanobacteria which function in nitrogen fixation
   c. Heterotrophic bacteria are more abundant than autotrophic bacteria
   d. Citrus canker is caused by a fungus

6. In Whittaker's five kingdom classification, which kingdom is considered as a 'grab-bag' of unnatural assemblage of organisms?
   a. Monera
   b. Protista
   c. Mycota
   d. Animalia

7. What is the common feature of *Gonyaulax*, *Euglena*, *Amoeba* and *Pinnularia*?
   a. They show holozoic nutrition
   b. They show autotrophic nutrition
   c. They are unicellular and prokaryotic
   d. They are unicellular and eukaryotic

8. What do you call bacteria that use organic molecules both for energy and carbon source?
   a. Photoautotrophs
   b. Photoheterotrophs
   c. Chemoautotrophs
   d. Chemoheterotrophs

9. All prokaryotes have a very primitive nucleus in which the genetic material is
   a. double-stranded, free, circular DNA with histones
   b. double-stranded, DNA without histones
   c. histones with linear double-stranded DNA
   d. linear single-stranded DNA without histones

10. Which among the following is a common feature in both Monerans and Protists?
    a. Presence of well-defined nucleus
    b. Presence of membrane bound cell organelles
    c. Presence of cell membrane
    d. Presence of 80S ribosomes

11. What do appendages like pili and fimbriae help in bacteria?
    a. Attachment
    b. Transduction
    c. Locomotion
    d. All of these

12. Cyanobacteria are monerans which have
    a. the ability to perform oxygenic photosynthesis due to the presence of chlorophyll a
    b. the ability to perform oxygenic photosynthesis and do not have chlorophyll a
    c. they have chlorophyll in chloroplasts
    d. the ability to do anoxygenic photosynthesis and possess nitrogenase

13. Which among the following have peptidoglycan and amino acids in their cell wall?
    a. Archaebacteria and eukaryotes
    b. Eukaryotes and protists
    c. Monera and protista
    d. Bacteria and cyanobacteria

14. Which pigment gives blue colour to the blue-green algae?
    a. Phycoerythrin
    b. Phycocyanin
    c. Phycocolloid
    d. All of the above

15. Which among the following statements are correct?
    A. Compared to many other organisms, bacteria as a group show the most extensive metabolic diversity
    B. Mycoplasma die in the absence of oxygen
    C. Cyanobacteria often form blooms in polluted water bodies
    D. No pathogenic mycoplasmas have been found so far

    a. A, B and C
    b. A and C
    c. B, C and D
    d. C and D

16. Which among the following is the habitat of methanogens?
    a. Sulphur rocks
    b. Marshy areas
    c. Acidic environments
    d. Hot springs

17. The contractile vacuole found in some of the Protists like the *Amoeba* is analogous to vertebrate
    a. sweat glands
    b. lungs
    c. rectum
    d. uriniferous tubules

18. What do we call the slug-like phase of the cellular slime mold life cycle?
    a. Plasmodium
    b. Pseudoplasmodium
    c. Sporangium
    d. Macrocyst

19. Which among the following is monogenetic?
    a. *Plasmodium vivax*
    b. *Trypanosoma gambiense*
    c. *Taenia solium*
    d. *Entamoeba histolytic*

20. How does the *Euglena* reproduce asexually?
    a. Transverse binary fission
    b. Longitudinal binary fission
    c. Multiple fission
    d. Irregular binary fission

21. Which among the following is an incorrect statement?
    a. The walls of diatoms are easily destructible
    b. 'Diatomaceous earth' is formed by the cell walls of diatoms
    c. Diatoms are the chief producers in the oceans
    d. Diatoms are microscopic and float passively on water

22. Given below is assertion and reason.
    A. Both assertion and reason are true with reason being the correct explanation
    B. Both assertion and reason are true but reason not correct explanation
    C. Assertion is true, but reason is wrong
    D. Both assertion and reason are wrong
    Assertion: *Shigella* species, *E.coli* and *Salmonella* species are all known to be the causes of diarrhoeal diseases.
    Reason: *Shigella*, *E.coli* and *Salmonella* are intestinal parasites.

    a. A
    b. B
    c. C
    d. D

23. When a bacterium is said to be amphitrichous, it means that it has
    a. no flagella
    b. flagella at one end
    c. flagella at both ends
    d. flagella all around

24. A pellicle is found in
    a. Chrysophytes
    b. *Euglena*
    c. Slime molds
    d. *Amoeba*

25. Identify the protozoan which is not free living among the following.
    a. *Euglena*
    b. *Amoeba*
    c. *Giardia*
    d. *Noctiluca*

Answer Key

Question Number	1	2	3	4	5	6	7
Correct Answer	(a)	(a)	(c)	(b)	(d)	(b)	(d)

Question Number	8	9	10	11	12	13	14
Correct Answer	(d)	(b)	(c)	(a)	(a)	(d)	(b)

Question Number	15	16	17	18	19	20	21
Correct Answer	(b)	(b)	(d)	(b)	(d)	(b)	(a)

Question Number	22	23	24	25
Correct Answer	(a)	(c)	(b)	(c)

Solutions

1. (a)
   The diatoms belong to the chrysophytes. Chrysophytes include the golden algae, commonly called 'Jewels of Sea'.
   Gonyaulax is a dinoflagellate and it causes the 'red tide' phenomenon.
   Euglena, belonging to the euglenoids, is considered to be the connecting link between plants and animals as it has characteristics of both.
   Paramoecium is a protozoan and is commonly called the 'slipper animalcule' because of its shape.

2. (a)
   Slime moulds, also called as the Myxomycetes, belong to Kingdom Protista. They are slimy mass of multi nucleate protoplasm having pseudopodia-like structures for engulfing food. They reproduce by fragmentation and spore formation.

3. (c)
   Bacteria can be classified on the basis of their shapes. The round (spherical) ones are the cocci, the rod shaped ones are the bacilli, the comma shaped ones are called the vibrio and the spiral shaped ones are called spirilla.

4. (b)
   Methanogens, belonging to Archaebacteria, are found in the gut of ruminants and are known to produce methane as an end product of their anaerobic respiration. The dung of these animals is used in biogas plants for the production of biogas.

5. (d)
   Citrus canker is a disease affecting *Citrus* species and is caused by the bacterium *Xanthomonas axonopodis*.
   Cyanobacteria are photosynthetic prokaryotes that are capable of performing photosynthesis due to the presence of chlorophyll pigments.
   Heterocysts are large, barrel shaped cells found in the filaments of the cyanobacteria which help in nitrogen fixation.
   Bacteria exhibit both autotrophic and heterotrophic nutrition. But the number of heterotrophic forms such as parasitic and saprophytic bacteria are predominantly more in all habitats.

6. (b)
The kingdom Protista is called 'grab bag' kingdom because it is such a diverse kingdom and one can get many different unicellular eukaryotic organisms that do not fit into any of the other kingdoms. The organisms in Kingdom Protista are either plant like, animal like, or fungus like.

7. (d)
Kingdom Protista includes all the unicellular eukaryotes. They are predominantly aquatic organisms with most of them being marine. They include both autotrophs as well as heterotrophs. *Gonyaulax, Euglena, Amoeba* and *Pinnularia* all belong to kingdom Protista, all are unicellular and eukaryotic organisms.
Holozoic nutrition is seen in *Amoeba* and *Euglena*.
All the mentioned organisms except *Amoeba* are said to be photosynthetic, so their mode of nutrition is autotrophic.

8. (d)
Chemoheterotrophs get their energy and carbon from organic compounds.

Photoautotrophs are the organisms that use the sun as the source of energy and carbon dioxide, an inorganic compound as source of carbon.

Photoheterotrophs are the organisms that use the sun as the source of energy, and organic compounds as sources of carbon.

Chemoautotrophs are organisms that obtain energy from oxidation of inorganic substances and carbon from inorganic compounds such as carbon dioxide.

9. (b)
Double-stranded, DNA without histones is found in all prokaryotes as genetic material. It is present in nucleoid or genophore. Histones are nuclear proteins that are found in association with the chromosomes in eukaryotes.

10. (c)
Monerans are prokaryotes and hence lack a well defined nucleus and membrane bound cell organelles. Monerans have 70S ribosomes.
Protists are eukaryotes and have well defined nucleus, membrane bound cell organelles and 80S ribosomes.
The similarity between monerans and protists is the presence of cell membranes.

11. (a)
Pili and fimbriae are small finger-like extensions in bacteria and primarily help in attachment. The pili plays an important role during conjugation. When two bacterial pili come in contact with one another, their walls dissolve to form the conjugation bridge.

12. (a)
Cyanobacteria undergo oxygenic photosynthesis. This means they use water as an electron donor. Splitting of this water results in liberation of oxygen. Cyanobacteria use chlorophyll a for oxygenic photosynthesis.
In anoxygenic photosynthesis, there is no release of oxygen as water is not the electron donor.

13. (d)
The cell walls of bacteria and cyanobacteria differ from other organisms in having peptidoglycan and amino acids (muramic acid). The cell wall in green plants have cellulose.

14. (b)
Phycocyanin gives blue colour to the blue-green algae.
The chlorophyll pigments give green colour.
The phycoerythrin gives red colour.
But collectively the members of the cyanophyceae are blue green in colour.
Phycocolloid is the coverings of algae which are polysaccharides and protects them from harsh environments.

15. (b)
Bacteria show a wide range of metabolic diversity. For example, in terms of nutritions, they could be autotrophic, chemotrophic and heterotrophic. Hence we see a wide range of metabolic activities.
When there is a good supply of food and suitable abiotic factors, there is a luxuriant growth of the cyanobacteria which often leads to the formation of blooms in the water.
Mycoplasmas are organisms that completely lack a cell wall. They are the smallest living cells known and can survive without oxygen. Many mycoplasmas are pathogenic for animals and plants.

16. (b)
The methane producing archaebacteria are called as methanogens. They are found in marshy areas and inside the gut of ruminant animals.

17. (d)
The contractile vacuole helps in maintaining the osmotic concentration of the cell by controlling the amount of water in the cell. The uriniferous tubules of the kidney also play a similar role in osmoregulation. Hence we say that the contractile vacuole is analogous to the uriniferous tubules.

18. (b)
A pseudoplasmodium, which is not typically a true plasmodium, is a multicellular uninucleate structure of the cellular slime molds composed of aggregated haploid amoebae. Haploid ameboid cells cease feeding and clump together to form a slug-like pseudoplasmodium. A stalked fruiting body is formed from this.
A plasmodium is a multinucleate, acellular and is the feeding stage of the Myxomycota.
A sporangium is a spore producing structure.
Macrocyst is formed during sexual reproduction when thousands of amoeba cells group together to form one large cell.

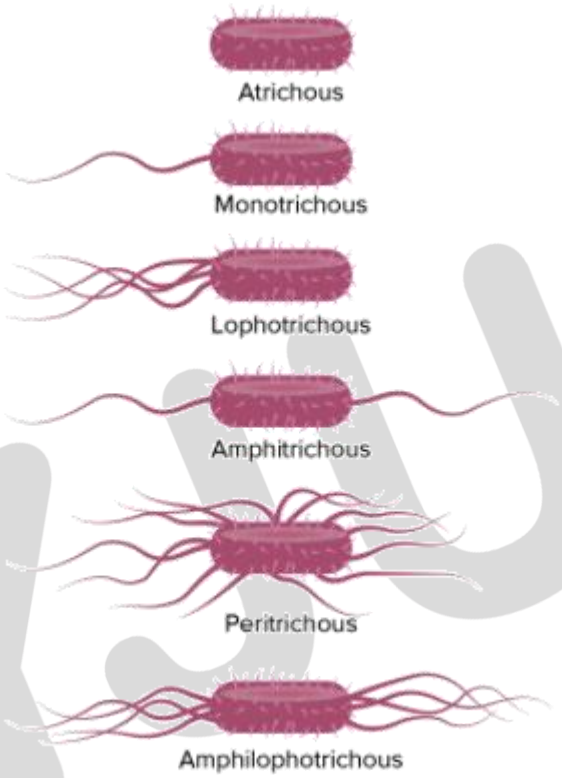
19. (d)
Monogenetic parasites complete their life cycle within a single host whereas a digenetic parasite requires two hosts to complete its life cycle.
Entamoeba is monogenetic with humans as the only host.
Plasmodium vivax is digenetic with the female *Anopheles* mosquito and the humans as hosts.
Trypanosoma gambiense is digenetic with the *Tse tse* fly and mammalian hosts like humans.
Taenia solium is also digenetic with pigs and humans as the hosts.

20. (b)
Binary fission is a type of asexual reproduction most commonly seen in prokaryotes and some single-celled eukaryotes. Here the parent cell divides and forms two daughter cells.
When the plane of division is transverse, it is transverse binary fission.
If the plane of division is longitudinal then it is longitudinal binary fission and if random division takes place it is said to be irregular.
Multiple fission leads to the division of the parent nucleus into several daughter nuclei mitotically without cell division.
Euglena reproduce asexually by longitudinal binary fission.

21. (a)
The walls of diatoms are made up of silica and silica is known to be indestructible. 'Diatomaceous earth' is formed by the cell walls of diatoms. They are microscopic, float passively on water and they are the chief producers in the oceans.

22. (a)
Shigella species, *E.coli* and *Salmonella* species are intestinal parasites and cause diseases in the intestine. Intestinal parasites cause diarrhoea due to inflammation and ulceration of intestinal mucosa. Infections of the intestine result in diarrhoea or dysentery, nausea, vomiting, and abdominal cramping.

23. (c)
A flagellum is a locomotory structure and its distribution varies from species to species. If it is absent, it is said to be atrichous. If it is at one end it is said to be monotrichous. If present at both ends, it is said to be amphitrichous and if it is all around then it is called peritrichous.



24. (b)
A pellicle is a covering found outside the plasma membrane of Euglenoids. Chrysophytes, like the diatoms, do not have pellicles. They have silica on their cell wall. Slime molds do not have a cell wall like the amoeba.

25. (c)
Free living organisms are not dependent on any other organism for survival. *Giardia* is a parasite that depends on host organisms for their survival. It is commonly nicknamed as "Grand Old Man of Intestine". It is found in the human small intestine. Infection occurs by entry of cysts of the parasite through food and water.