World of Microbes

Question / Answers :-

1) Define the terms - microbes, biodiversity, microbiology:

Ans Microbes - Those organisms which are not visible with naked eyes and viewed under microscope only are called microbes.
Ex- virus, bacteria etc.

Biodiversity - (Bios = life, diversity = forms)
Biodiversity in short is the number and types of organisms present on earth

Microbiology - Microbiology is the scientific study of microbes.

2) State the main characteristic features of microbes.

Ans The main characteristic features of microbes are :-

i) Microbes are microscopic organism can only seen under microscope and are not visible to naked eyes because they have a size of 0.1 mm or less.

ii) Microbes generally do not have complex multicellular structures. Microbes belong to diverse groups of organisms.

iii) Majority of microbes used oxygen for their survival few can live in low oxygen concentration but few can survive without oxygen.

iv) Moist (damp), dark or less lighted areas are preferable for microbes growth and survival.

3) Name the oldest microbe.

Ans. The oldest microbe is cyanobacteria.

4) How do the microbes respire?

Ans- Microbes need food to respire. They either respire aerobically and anaerobically.

5) What mode of nutrition nutrients are found in microbes?

Ans- Autotrophic mode of nutrition are found in microbes

6) Which type of environment is most suitable for microbial growth?

Ans- Microbes can survive at places where no other organisms live. For example microbes in hot springs and hydrothermal vents with temperature of 100°c (Thermophilic bacteria - heat loving) and several meter under thick snow several degree below 0°C. Moist (damp), dark or less lighted areas are preferable for microbes growth and survival.

6) Which type of environment is most suitable for microbial growth?

Ans- Moist (damp), dark or less lighted areas are preferable for microbes growth and survival.

7) What are thermophilic bacteria?

Ans- The bacteria which can survive in hot springs and hydrothermal vents with temperature of 100°C are known as thermophilic bacteria.

8) Name the major groups of microbes.

Ans- Microbes are mainly belongs to 4-major groups:-
(1) Bacteria (Monera - kingdom)
(2) Protozoa (Protista - kingdom)
(3) Fungi (Fungi - kingdom)
(4) Algae (Plantae - kingdom)

9) Classify bacteria according to their shape.

Ans- Bacteria are of various shapes —
i) Rounded (Cocus)
ii) Coma (Vibrio)
iii) Rod shaped (Bacillus)
iv) spiral shapped (Spirillum)

10) To which group bacteria belong to?

Ans Bacteria belongs to the kingdom Monera.

11) State the characteristic feature of bacteria.

Ans- The characteristics features of bacteria are:
i) Bacteria are classified as prokaryotes.
ii) It have its own spiral or circular DNA as genetic material.
iii) It did not have a nuclear membrane.
iv) They have no membrane bounded organelles like golgi bodies, mitochondria, lysosome, plastids etc.
v) They are single - celled organisms.

12) ~~Which~~ Why bacteria was previously considered as

plant cell?

Ans- The plant cell possesses a cell wall which is composed of cellulose, pectin and lignin. The cell wall provides mechanical strength and protection to the internal cellular organelles. The bacterial cell also possesses a cell wall which is made up of peptidoglycan. Due to the presence of the cell wall, the bacteria were previously considered ~~as~~ as plant cell.

13) What is staining? What is ~~the~~ its advantages in the field of biological sciences?

Microbes are microscopic organisms. Before observing microbes under microscope these organisms are coloured by different substances, these colouring substances are known as stain and the process is known as staining.

Some stains can penetrate cell walls and highlight cell components, and help scientists ~~visualize~~ visualize

metabolic processes. Stains also help distinguish between live cells and dead ones. Moreover, staining allows scientists count the number of cells of a particular type within a certain biomass. This are the advantages of ~~sta~~ staining in the field of biological sciences.

14) Why protozoa are grouped under the kingdom protista?

Ans- Protozoans are unicellular, eukaryotic organisms having a heterotrophic mode of nutrition. They are considered as the relatives of animals because of their motile nature and heterotrophic mode of nutrition. Hence, Protozoans are placed under the kingdom Protista.

) Name the locomotary organs of protozoa.

The locomotory organs of protozoa are Cilia (hair like) flagella (whip like) pseudopoda (finger like outgrowth of cytoplasm

12) Name a photosynthetic protozoa?

Ans. Euglina is a photosynthetic protozoa.

13) Why fungi are saprophytic?

Ans. Fungi have no photosynthetic pigment. Therefore, they are not able to produce their own food in their body. They collect food from decaying substances. So, fungi are saprophytic.

14) Describe the structure of fungus with suitable diagram.

Ans. Fungi body cannot be differentiated into root, stem and ~~leaves~~ leaves. They may be unicellular (yeast), or multicellular (Penicilium). Cells of the body connect each other and form a (filamentous) ribbion like structure hyphae. Often hyphae divide in branches. Hyphae combine to form a structure called mycellium (e.g. Penicillium, Mucs

19) Why algae is categorised under the group of thallophytes?

Ans Thallophytes includes plants in which the body is not differentiated into root, stem and leaves. Algae is also not differentiated into root, stem and leaves and have a thallose plant body. So, algae is categorised under the group of thallophtes.

20) What is the natural habitat of algae?

Ans Algae are mainly aquatic (fresh-water or marine) though it also grow in wet and moist places. So, the natural habitat of algae is water.

21) Why virus is considered as a bridge between living and non-living?

Ans- Virus is called bridge between living and non-living ~~organisms. Because they~~ organisms because they behave as living organisms

inside the host body and behave as non-living organism outside the host body.

22) What mode of nutrition is found in virus?

Ans. Virus don't need food so they have no mode of nutrition.

23) Draw and describe the structure of a virus.

Ans. Virus have not a typical cell. Virus are also called acellular because they have no protoplasm. Virus may be rounded, tadpole like or may be of different type. They have either DNA or RNA (nucleic acid) and a protein coat outside (capsid) the nucleic acid.

24) Name a useful virus.

Ans. Bacteriophages

25) Explain the parasitic relationship of microbe with other organism.

Ans Some disease causing microbes enter into the particular part of the body or particular type of cell (such as ~~most~~ malarian parasite inter RBC, liver cells). Their growth and reproduction depends on the host cell. They collect food and get shelter in particular cell or organ. Those microbes later hampers the normal functioning of host cell and system. The interrelationship between the host and parasite is called parasitism. This is the parasitic relationship of microbes with other organism.

26) How can the microbes can enter into the human body?

Ans Microbes usually enter our bodies through the mouth, eyes, nose or through wounds or bites that breach the skin barrier.

27) What do you mean by N_2 fixing bacteria? Give example.

Ans Some N_2 fixing bacteria form a mutually beneficial ~~arr~~ association with the plant. They live in the nodules of leguminous plants root such as pea, gram, beens etc.
Example - Rhizobium etc.

28) What is the need for nitrogen in plant body?

Ans Nitrogen is an essential element of all the amino acids in plant structu

which are the building blocks of plant proteins. They are important in the growth and development of vital plant tissues and cells like the cell membranes and chlorophyll. Plant take Nitrogen (N_2) from atmosphere and form nodules after decomposition of nodules nitrogen content of soil increase.

29) What is symbiosis?

Ans- Some nitrogen fixing bacteria form a mutually beneficial association with the plant. This association is known as symbiosis