# MICROORGANISMS (Page 58 – 61)

## TEACHING TASK

### Single Answer Type

**1. Pasteurization means (C)** Heating milk or other liquids to 60°C to 70°C for short duration.

*Explanation*: Pasteurization involves heating liquids like milk to kill harmful bacteria without affecting quality, typically at 60–70°C for a short time.

**2. Bacteria differ from other plants in that they do not have (D)** A well-defined nucleus.

*Explanation*: Bacteria are prokaryotes, lacking a well-defined nucleus, unlike plants, which are eukaryotes with a defined nucleus.

**3. Who proposed the germ theory of disease? (D)** Louis Pasteur.

*Explanation*: Louis Pasteur developed the germ theory, linking microorganisms to diseases.

**4. Comma-shaped bacteria are termed as (D)** Vibrio.

*Explanation*: Vibrio bacteria are comma-shaped, e.g., *Vibrio cholerae*.

**5. Food spoilage can be prevented by (D)** All of these.

*Explanation*: Healing (likely a typo for heating), chemicals (preservatives), and canning all prevent food spoilage.

**6. Yeast is used in the production of (B)** Alcohol.

*Explanation*: Yeast ferments sugars to produce alcohol, as in brewing and winemaking.

**7. The fixation of free nitrogen by bacteria in the soil is done by (A)** Azotobacter.

*Explanation*: *Azotobacter* is a free-living nitrogen-fixing bacterium in soil.

**8. Nitrifying bacteria convert the (B)** Ammonium salts into nitrates.

*Explanation*: Nitrifying bacteria (e.g., *Nitrosomonas*, *Nitrobacter*) convert ammonium to nitrates in the nitrogen cycle.

**9. The bacterial genome is called (C)** Nucleoid.

*Explanation*: The bacterial genome is located in a region called the nucleoid, not a true nucleus.

**10. Antibiotics are mostly obtained from (A)** Bacteria.

*Explanation*: Many antibiotics (e.g., streptomycin) are derived from bacteria like *Streptomyces*.

**11. Nitrates are converted into nitrogen by (A)** Denitrifying bacteria.

*Explanation*: Denitrifying bacteria convert nitrates back to nitrogen gas in the nitrogen cycle.

**12. All bacteria have the following organelle (A)** Mesosomes.

*Explanation*: Mesosomes are invaginations of the bacterial cell membrane, common in bacteria, unlike Golgi bodies, mitochondria, or chloroplasts.

**13. Rounded bacteria are (D)** Cocci.

*Explanation*: Cocci are spherical or rounded bacteria.

**14. The following is an antibiotic (B)** Streptomycin.

*Explanation*: Streptomycin is a well-known antibiotic; the others are not.

**15. Virus possess (D)** Nucleic acid and protein.

*Explanation*: Viruses consist of nucleic acid (DNA or RNA) encased in a protein coat.

**16. Capsid is (B)** Protein cover of virus.

*Explanation*: The capsid is the protein coat surrounding a virus's genetic material.

**17. Carrier of malaria-causing protozoan is (A)** Female Anopheles mosquito.

*Explanation*: The female *Anopheles* mosquito transmits the malaria-causing protozoan *Plasmodium*.

**18. Who discovered vaccination against smallpox (A)** Jenner.

*Explanation*: Edward Jenner developed the smallpox vaccine.

**19. Bacteriophage is (A)** Virus attacking bacteria.

*Explanation*: Bacteriophages are viruses that infect bacteria.

**20. The most common carrier of communicable diseases is (B)** Housefly.

*Explanation*: Houseflies commonly spread diseases by contaminating food.

**21. Thread-like fungal structure are (A)** Hyphae.

*Explanation*: Hyphae are the thread-like structures forming the fungal mycelium.

**22. Fungal cell wall is composed of (A)** Chitin.

*Explanation*: Fungal cell walls are made of chitin, unlike plant cell walls (cellulose).

**23. Fleming discovered penicillin from (A)** Penicillium notatum.

*Explanation*: Alexander Fleming discovered penicillin from the fungus *Penicillium notatum*.

**24. Yeast are economically important because they (D)** Are used in wine and baking industry.

*Explanation*: Yeast is used for fermentation in wine production and leavening in baking.

**25. The bread or idli dough rises because of (C)** Growth of yeast cells.

*Explanation*: Yeast ferments sugars, producing $CO_2$, which causes dough to rise.

**One or More Than One Answer Type**

**1. Which of the following statements are incorrect?**

**A, C** *Explanation*:

**A**: Viruses do not aid in bread-making; yeast (a fungus) does.

**B**: Correct, *Euglena* can perform photosynthesis due to chloroplasts.

**C**: Protozoa are animal-like, not plant-like organisms.

**2. Which of the following statements are incorrect?**

**A, B, C** *Explanation*:

**A**: Viruses contain either DNA or RNA, not both.

**B**: Lichen is a symbiotic association of algae and fungi, not just an alga.

**C**: Foot and mouth disease is caused by a virus, not bacteria.

**3. Which of the following statements are correct?**

**C** *Explanation*:

**A**: Incorrect, cocci are round, not spiral (spirilla are spiral-shaped).

**B**: Incorrect, bacteria lack a well-developed nucleus (they have a nucleoid).

**C**: Correct, *Spirogyra* is a filamentous alga.

**4. Which of the following statements are correct?**

**B, C** *Explanation*:

**A**: Incorrect, tobacco mosaic is caused by a virus, not a fungus.

**B**: Correct, pasteurization preserves milk by heating to kill bacteria.

**C**: Correct, moulds are a type of fungi.

**5. Which of the following statements are correct?**

**A** *Explanation*:

**A**: Correct, the study of algae is called phycology.

**B**: Incorrect, agar is obtained from red algae (e.g., *Gelidium*), not blue-green algae.

**C**: Incorrect, malaria is caused by *Plasmodium* transmitted by mosquitoes, not fleas.

**Match the Following**

**A) Column-A and Column-B**

Phycology – (c) Study of algae

Spirilla – (e) A kind of bacterium

Chlorella – (a) An alga

Measles – (b) A disease

Bacteria – (e) A kind of bacterium (context-dependent, as spirilla is a bacterial shape)

*Correct Matches*:

1–c, 2–e, 3–a, 4–b, 5–e

**B) Column-A and Column-B**

Mycelium – (d) Rhizopus (mycelium is the fungal structure, e.g., in *Rhizopus*)

Potato blight – (g) Fungal disease

Paramaecium – (a) Slipper shaped

Malaria-causing protozoan – (b) Plasmodium

Sodium metabisulphite – (c) Jam, jelly, etc. (used as a preservative)

Rabies – (e) Viral disease

Ethyl alcohol – (f) Fermentation of molasses

*Correct Matches*:

1–d, 2–g, 3–a, 4–b, 5–c, 6–e, 7–f

## Learner's Task (Page 61 - 64)

**Beginners (Level - I)**

**Single correct answer type**

**1. Botulism is caused by (B)** Clostridium botulinum.

*Explanation*: *Clostridium botulinum* produces toxins causing botulism.

**2. Bacterial infection of food can be prevented by (D)** Both (A) and (C).

*Explanation*: Covering food and heating it to 70°C prevent bacterial contamination.

**3. Elephantiasis is caused by (B)** Culex mosquito.

*Explanation*: Elephantiasis (filariasis) is caused by filarial worms transmitted by *Culex* mosquitoes.

**4. Bacteria bearing flagella all over body are (A)** Peritrichous.

*Explanation*: Peritrichous bacteria have flagella distributed over their entire surface.

**5. BCG stands for (B)** Bacillus Calmette-Guérin.

*Explanation*: BCG is a vaccine for tuberculosis.

**6. DPT vaccine is for (B)** Diphtheria, Pertussis, Tetanus.

*Explanation*: DPT protects against these three diseases.

**7. MMR vaccine is given for (C)** Mumps, Measles, Rubella.

*Explanation*: MMR vaccine targets these viral diseases.

**8. Ringworm spreads through (B)** Direct skin contact.

*Explanation*: Ringworm, a fungal infection, spreads via skin contact.

**9. World TB day is celebrated on (B)** March 24.

*Explanation*: World TB Day is observed on March 24 to raise awareness about tuberculosis.

**10. Who discovered antibiotic streptomycin effective against Tuberculosis (A)** Selman A. Waksman.

*Explanation*: Waksman discovered streptomycin, used to treat TB.

**11. Match the following pairs (B)** 1–II, 2–IV, 3–III, 4–I.

*Explanation*:

Tuberculosis: *Mycobacterium* (II)

Typhoid: *Salmonella* (IV)

Malaria: *Plasmodium* (III)

Dysentery: *Entamoeba* (I)

**12. In blue-green algae, the structure specialized for nitrogen fixation is (C)** Heterocyst.

*Explanation*: Heterocysts in cyanobacteria (blue-green algae) fix nitrogen.

**13. The similarity between bacterium and cyanobacterium is in the presence of (B)** Nucleoid.

*Explanation*: Both bacteria and cyanobacteria are prokaryotes with a nucleoid.

**14. Solution:** W: Virus X: Protozoan Y: Fungus

The correct answer is (C) virus, fungus, protozoan.

**15. Rocky Mountain spotted fever is caused by (A)** Rickettsias.
*Explanation*: This disease is caused by *Rickettsia* bacteria, transmitted by ticks.

**16. Solution:** Microorganism: Fungi Method of reproduction: Spore formation the correct answer is (D) Fungi, Spore formation.

**17. Mycoplasma differ from bacteria in (A)** Not having a cell wall.

*Explanation*: Mycoplasma lack a cell wall, unlike most bacteria.

**18. Escherichia coli in human intestine synthesizes (D)** Vitamin B and K.

*Explanation*: *E. coli* produces vitamins B and K in the human gut.

**19. The smallest bacterium is (B)** Dialister pneumosintes.

*Explanation*: *Dialister pneumosintes* is among the smallest known bacteria.

**20. Bacteria having a tuft of flagella at one end are called (C)** Lophotrichous.

*Explanation*: Lophotrichous bacteria have a tuft of flagella at one end.

**21. Solution:** P: Bacteria Q: Protozoa R: Viruses S: Algae

The correct answer is (A) Bacteria, Protozoa, Viruses, Algae.

**22. Saccharomyces cerevisiae is (C)** Both a and b.

*Explanation*: *Saccharomyces cerevisiae* is used as baker's and brewer's yeast.

**23. Yeast contains maximum amount of (C)** Protein.

*Explanation*: Yeast is rich in protein, used as a nutritional supplement.

**24. Solution:** P: Diatom Q: Chlamydomonas R: Spirogyra S: Volvox

The correct answer is (A) P - Diatom, Q - Chlamydomonas, R - Spirogyra, S - Volvox.

**25. Solution:** The organism that can photosynthesize but lacks a cell wall is a protozoan with chlorophyll, represented by (C). The correct answer is (C).

**26. Contractile vacuole of Amoeba is analogous to (A)** Kidneys.
*Explanation*: The contractile vacuole in *Amoeba* regulates water balance, similar to kidneys.

**27. Viruses are (C)** Complete parasites. *Explanation*: Viruses are obligate parasites, requiring a host to replicate.

**28. Protein coat of virus is called (B)** Capsid. *Explanation*: The capsid is the protein coat encasing a virus's nucleic acid.

**29. Cell organelles that resemble viruses in chemical nature are (B)** Ribosomes. *Explanation*: Ribosomes, like viruses, contain nucleic acid (RNA) and protein.

**30. Virus possessing only proteins are called (B)** Prions. *Explanation*: Prions are infectious proteins without nucleic acids.