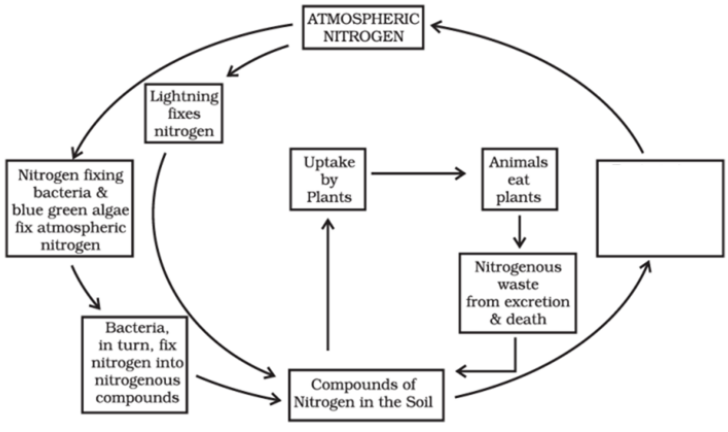
INDIAN SCHOOL AL WADI AL KABIR		
CLASS: VIII	**DEPARTMENT: SCIENCE 2025-26**	**DATE: 14-08-2025**
WORKSHEET NO: 5	**TOPIC: MICROORGANISMS: FRIEND AND FOE**	**Note: A4 FILE FORMAT**
NAME OF THE STUDENT:	**CLASS & SEC:**	**ROLL NO.**

I. OBJECTIVE TYPE QUESTIONS

1. To make a soft dough, a small amount of yeast powder, sugar, and warm water are added to the flour. Identify the product formed and the change that occurred.
   a) Oxygen is produced during respiration that increases the volume of the dough.
   b) Carbon dioxide is produced during respiration that increases the volume of the dough.
   c) Water vapour is produced during respiration that decreases the volume of the dough.
   d) Carbon dioxide is produced during respiration that decreases the volume of the dough.
2. Which among the following are airborne diseases?
   a) Cholera and Typhoid
   b) Polio and Hepatitis A
   c) Malaria and dengue
   d) Tuberculosis and measles
3. What should be added to the blank box to complete the given Nitrogen cycle?
   a) Bacteria mix nitrogen gas with the soil.
   b) Bacteria fixed nitrogen into soil.
   c) Bacteria turn fixed nitrogen gas into nitrogenous compounds.
   d) Bacteria convert the nitrogenous compounds into gaseous nitrogen.



4. Alina has cold and viral flu for the past 5 days. Her mother gave her antibiotics but she is not recovering. What can be a likely reason for the same?

a) Antibiotics are used against viral infections.

b) Antibiotics are used against bacterial infections.

c) Antibiotics take time to cure the infection.

d) Antibiotics are to prevent infections rather than to cure them.

5. Antibodies are produced in the body to fight the microbes when they enter the body. How does the human body react when these microbes attack again?

a) The human body remembers the microbes and quickly forms antibodies against it.

b) The human body becomes weak and is unable to form antibodies against the microbes.

c) The human body eliminates the microbes without even producing antibodies against them.

d) The human body produces antibodies but takes a longer time to overcome the microbial infection.

6. Which option shows the correct example of diseases in plants and animals and the corresponding causative agents?

(a)

Disease	Affects	Caused by
Anthrax	Plants	Bacterium

(b)

Disease	Affects	Caused by
Cholera	Animals	Fungus

(c)

Disease	Affects	Caused by
Citrus canker	Animals	Bacterium

(d)

Disease	Affects	Caused by
Rust of wheat	Plants	Fungus

7. What is true about the communicable disease ‘dengue’?

a) It occurs due to the female Aedes mosquito that acts as a carrier of the dengue virus.

b) It occurs due to the male Aedes mosquito that acts as a carrier of the dengue virus.

c) It occurs due to the male Anopheles mosquito that acts as a carrier of the dengue virus.

d) It occurs due to the female Anopheles mosquito that acts as a carrier of the dengue virus.

For questions 8-10, two statements are given —one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii), and (iv) as given below -

i) Both A and R are true, and R is the correct explanation of the assertion.

ii) Both A and R are true, but R is not the correct explanation of the assertion.

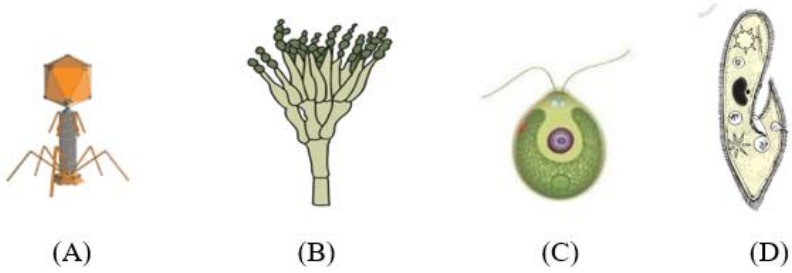
iii) A is true, but R is false.

iv) A is false, but R is true

8. **Assertion**: Anthrax is a dangerous human and cattle disease caused by a bacterium.
   Reason: All microorganisms cause diseases in humans and animals.
9. **Assertion:** When an antigen enters our body, antibiotics are produced against it.
   Reason: Antibiotics taken unnecessarily may kill the beneficial bacteria in the body.
10. **Assertion:** Dry fruits and vegetables are sold nowadays in air tight packets.
    Reason: The sealed air-tight packets prevent the attack of microbes.

II. VERY SHORT ANSWER TYPE QUESTIONS (2M):

1. Identify the following microorganisms and their groups.



(A) (B) (C) (D)

[Hint: A. Bacteriophage (Virus) B. Penicillium (Fungus)
C. Chlamydomonas (Algae) D. Paramecium (Protozoa)

2. What is meant by food preservation? What role does sugar play in the preservation of food?

[Hint: Food preservation is the method of preserving food from being spoiled by microbes. The role of sugar in food preservation is significant. By adding sugar to the food item, we reduce its moisture content, and hence, it stops the growth of the microorganisms.]

3. What is the role of microorganisms in cleaning the environment?

[Hint: Microorganisms decompose dead organic wastes of plants and animals and convert them into simple substances. The nutrients released in the process can be used by the plants again. Thus, microorganisms can be used to degrade waste substances into manure and thereby clean up the environment.]

4. Explain nitrogen fixation in leguminous plants.

[Hint: The leguminous plants such as beans and peas have root nodules which inhabit nitrogen fixing Rhizobium bacteria. These plants and the bacteria live together in symbiotic relationship, where both organisms are mutually benefited. The bacterium provides nitrogen to the plant and the plant gives food and shelter.]

5. Why are viruses considered to be on the borderline between living and non-living things?

[Hint: Viruses do not grow or reproduce by themselves, which make them non-living. However, when a virus enters the living cell of an organism, it makes use of the resources in the host cell and starts reproducing.]

6. What are antibiotics? Give two examples.

[Hint: Antibiotics are medicines that can kill or stop the growth of disease-causing microorganisms. For Example, streptomycin and tetracycline.]

III. SHORT ANSWER TYPE QUESTIONS (3M):

1. What is a vaccine? How does it work?

[Hint: Vaccines are dead or weakened microorganisms that do not harm the body. Any foreign body that enters our body is called an antigen. In response to this, our body produces proteins that help fight off the antigens called antibodies. When a vaccine is introduced into a healthy person's body, specific antibodies are produced against these killed and weakened microbes. These antibodies remain in the body and protect it from future infection. This way, the body develops immunity against that disease.]

2. How can we prevent the following diseases?

a) Cholera b) Typhoid c) Hepatitis A

[Hint: a) Cholera: By maintaining personal hygiene and good sanitation practices.

b) Typhoid: Eating properly cooked food, drinking boiled water, getting vaccinated against the disease.

c) Hepatitis A: Drinking boiled water and getting vaccinated against the disease.]

3. Mention some important uses of fungi.

[Hint: Some antibiotics are made from fungi. When plants and animals die, fungi present in the soil convert the nitrogenous wastes into nitrogenous compounds to be used by plants again. Yeasts are single-celled fungi. It is used in baking industry for making breads, pastries and cakes and for commercial production of alcohol and wine.]

4. Give reasons for the following.

a) Fresh milk is boiled before consumption, while processed milk stored in packets can be consumed without boiling.

[Hint: Fresh milk is boiled before consumption to kill the microorganisms in it. But packed milk is pasteurised and does not contain any microorganisms. It can thus be consumed without boiling.]

b) Raw vegetables and fruits are kept in refrigerators, whereas jams and pickles can be kept outside.

[Hint: Raw vegetables and fruits are easily contaminated by microorganisms and become spoiled. They are kept in refrigerator as low temperature inhibits the growth of microbes. Jams and pickles contain sugar and salt as preservatives. They inhibit the growth of microbes.]

c) Farmers prefer to grow beans and peas in nitrogen-deficient soils.

[Hint: Beans and peas are leguminous plants and have Rhizobium bacteria in their root nodules. These bacteria can fix atmospheric nitrogen to enrich the soil with nitrogen and increase its fertility.]

5. a) Define communicable diseases. Give two examples.

[Hint: Microbial diseases that can spread from an infected person to a healthy person through air, water, food or physical contact are called communicable diseases. Examples of such diseases include cholera, common cold, chicken pox and tuberculosis.]

b) What are pathogens?

[Hint: Disease-causing microorganisms are called pathogens or germs.]

c) Mention any three ways through which pathogens are transmitted.

[Hint: The three ways by which pathogens are transmitted are as follows:

i) When a person sneezes or coughs, tiny droplets containing several disease-causing microorganisms to come out of the mouth, and are released into the air. They are transmitted to a healthy person while breathing.

ii) By making direct contact with an infected person, pathogens can be transferred to a healthy person.

iii) Carriers of pathogens also help in their transmission. For instance, when a fly sits on animal excreta or garbage, harmful disease-causing microbes stick to its legs. And when this fly sits on the food items, pathogens get transferred to them. This contaminated food items cause serious diseases when it is eaten by a healthy person.]

6. Write the names of any three plant diseases and the causative organisms.

[Hint: i) Citrus canker – caused by Bacteria

ii) Rust of wheat – caused by Fungi

iii) Yellow vein mosaic of bhindi (Okra) – caused by a Virus]

IV. LONG ANSWER TYPE QUESTIONS (5M):

1. Explain the process of the Nitrogen cycle.

[Hint: Our atmosphere has 78% nitrogen gas. Nitrogen is one of the essential constituents of all living organisms as part of proteins, chlorophyll, nucleic acids and vitamins.

- **Nitrogen cannot be taken directly by plants and animals. Certain bacteria and blue-green algae in the soil fix nitrogen from the atmosphere and convert it into nitrogen compounds. Eg, Rhizobium bacteria live in the root nodules of leguminous plants such as beans and peas, with which it has a symbiotic relationship. Sometimes nitrogen gets fixed through the action of lightning.**
- **Once nitrogen is converted into these usable compounds, it can be utilized by plants from the soil through their root system. Nitrogen is then used for the synthesis of plant proteins and other compounds.**
- **Animals feeding on plants get these proteins and other nitrogen compounds.**
- **When plants and animals die, bacteria and fungi in the soil convert the nitrogenous wastes into nitrogenous compounds to be used by plants again.**

- **Certain bacteria convert some nitrogenous compounds to nitrogen gas, which goes back into the atmosphere. As a result, the percentage of nitrogen in the atmosphere remains more or less constant.**

2. a) Briefly explain the various food preservation techniques.

[Hint: i) Preservation by Common Salt: Meat and fish are covered with dry salt to prevent the growth of bacteria.

ii) Preservation by Sugar: Sugar reduces the moisture content, which inhibits the growth of bacteria that spoil food.

iii) Preservation by Oil and Vinegar: The use of oil and vinegar prevents the spoilage of pickles because bacteria cannot live in such an environment.

iv) Heat and Cold Treatments: Boiling kills many microorganisms. Low temperature inhibits the growth of microbes.

v) Storage and Packing: Things sealed in air-tight packets prevent the attack of microbes.]

b) Write the names of any two food preservatives.

[Hint: Sodium benzoate and sodium metabisulphite are common preservatives.]

V. CASE STUDY- BASED QUESTIONS/PASSAGE-BASED QUESTIONS:

You must have observed your mother boiling milk before it is stored or used. Boiling kills many microorganisms. Similarly, we keep our food in the refrigerator. Low temperature inhibits the growth of microbes. Pasteurised milk can be consumed without boiling as it is free from harmful microbes. The milk is heated to about 70 degree Celsius for 15 to 30 seconds and then suddenly chilled and stored. By doing so, it prevents the growth of microbes. This process was discovered by Louis Pasteur. It is called pasteurisation.

i) Why do we store our food in the refrigerator?

[Hint: Low temperature inhibits the growth of microbes, thereby preventing spoilage of food.]

ii) What is pasteurisation? Name the scientist who discovered it.

[Hint: The milk is heated to about 70 degree Celsius for 15 to 30 seconds and then suddenly chilled and stored. This process is called pasteurisation and it was discovered by Louis Pasteur.]

iii) Why is pasteurised milk safe to be consumed without boiling?

[Hint: Pasteurised milk can be consumed without boiling, as it is free from harmful microbes.]

ANSWERS FOR OBJECTIVE TYPE QUESTIONS 1 - 10

1.(b) 2. (d) 3. (d) 4. (b) 5. (a) 6. (d) 7. (a) 8. (iii) 9. (iv) 10. (i)

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