



<b>CLASS: VIII</b>	<b>DEPARTMENT: SCIENCE 2024-2025</b>	<b>DATE: 08-05-2024</b>
<b>WORKSHEET NO: 2 WITH ANSWERS</b>	<b>TOPIC: MICROORGANISMS: FRIEND AND FOE</b>	<b>Note: A4 FILE FORMAT</b>
<b>NAME OF THE STUDENT:</b>	<b>CLASS &amp; SEC:</b>	<b>ROLL NO.</b>

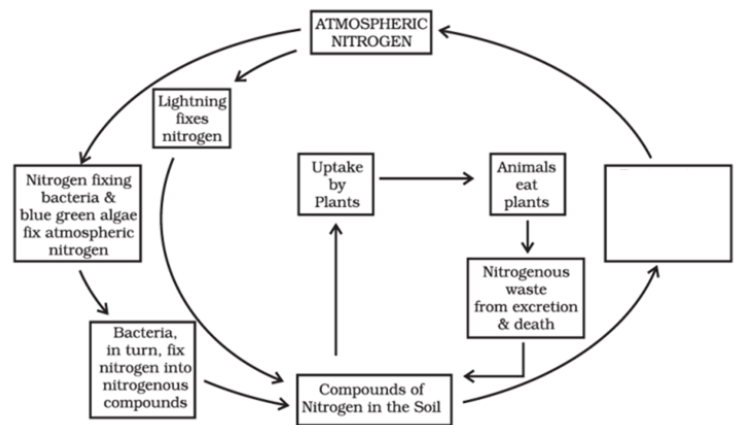
**I. OBJECTIVE TYPE QUESTIONS**

1. 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.

2. 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.**



3. 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.

4. 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

[Hint: Option d]

5. Which among the following are airborne diseases?

- a) Cholera and Typhoid
- b) Polio and Hepatitis A
- c) Malaria and dengue

**d) Tuberculosis and measles**

6. 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.

**For the following questions, 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**

**7. Assertion:** Milk is converted into curd by bacteria.

**Reason:** Lactobacillus promotes the formation of curd.

**Ans: i) Both A and R are true and R is the correct explanation of the assertion.**

**8. Assertion:** When an antigen enters our body, antibiotics are produced against it.

**Reason:** Antibiotics taken unnecessarily may kill the beneficial bacteria in the body.

**Ans: iv) A is false but R is true**

**9. Assertion:** We must preserve food to prevent it from being spoilt.

**Reason:** Food poisoning could be due to the consumption of food spoilt by some microorganisms.

**Ans: i) Both A and R are true and R is the correct explanation of the assertion.**

**10. Assertion:** Disease-causing microorganisms are called pathogens.

**Reason:** To prevent the spread of diseases, it is better to keep a distance from infected persons.

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

## **II. VERY SHORT ANSWER (2M):**

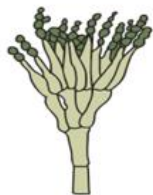
1. What is the role of microorganisms in cleaning the environment?

**[Hint: The 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.]**

2. Identify the following microorganisms and their groups.



(A)



(B)



(C)



(D)

**[Hint: A. Bacteriophage (Virus)**

**B. Penicillium (Fungus)**

**C. Chlamydomonas (Algae)**

**D. Paramecium (Protozoa)**

3. 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.]**

4. 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 makes 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.]**

5. What are biological nitrogen fixers?

**[Hint: Some bacteria and blue-green algae can fix nitrogen from the atmosphere to enrich the soil with nitrogen and increase its fertility. These microbes are commonly called biological nitrogen fixers.]**

6. What are the causes of food poisoning?

**[Hint: Microorganisms, which are present in food sometimes, produce toxic substances and make the food poisonous. Consumption of this spoilt food can cause serious illness and even death.]**

7. What causes tuberculosis and how does it spread?

**[Hint: Tuberculosis is caused by bacteria that spread from person to person through microscopic droplets released into the air. This can happen when someone with tuberculosis coughs, speaks, sneezes, or spits.]**

### **III. SHORT ANSWER TYPE QUESTIONS: (3M)**

1. Describe how curd is made from milk.

**[Hint: When a small amount of pre-made curd is added to warm milk, then the lactobacillus bacterium present in curd multiplies in milk and converts it into curd. During this process, the lactobacillus bacterium acts on the lactose sugar present in milk and converts it into lactic acid. This lactic acid then converts milk into curd.]**

2. 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.]**

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

4. 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 the baking industry for making breads, pastries, and cakes and for commercial production of alcohol and wine.]

5. 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. However, 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 get easily infected by microorganisms and get spoilt. They are kept in a 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 in their root nodules. These bacteria can fix atmospheric nitrogen to enrich the soil with nitrogen and increase its fertility.]

#### **IV. LONG ANSWER TYPE QUESTIONS (5 M):**

1.a. What is a pathogen? How does it enter the body of living organisms?

[Hint: Disease-causing microorganisms are called pathogens or germs. They gain entry into the body of living organisms through air, food, and water, direct contact with an infected person, through insects, and by cuts and wounds.]

b. Mention any three ways through which pathogens are transmitted.

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

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

transmitted to a healthy person while breathing.

ii) By making direct contacts 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.]

2. 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 the atmosphere remains more or less constant.

3. Briefly explain the various food preservation techniques.

- [Hint: Preservation by Common Salt: Meat and fish are covered with dry salt to prevent the growth of bacteria.
- Preservation by Sugar: Sugar reduces the moisture content which inhibits the growth of bacteria that spoil food.
- Preservation by Oil and Vinegar: The use of oil and vinegar prevents the spoilage of pickles because bacteria cannot live in such an environment.
- Heat and Cold Treatments: Boiling kills many microorganisms. Low temperature inhibits the growth of microbes.
- Storage and Packing: Things sealed in air-tight packets prevent the attack of microbes.]

## **V. SOURCE-BASED/CASE-BASED QUESTIONS:**

1. Ria thought of making curd. For this, she took lukewarm milk, mixed some curd into it and stirred well. She kept the mixture in the fridge. The next day she observed that the curd was not set. Can you tell why the curd did not set?

**[Hint: Curd did not set because she kept the mixture in the fridge. The lower temperature of the fridge retarded the growth of Lactobacillus in the mixture.]**

2. Paheli watched her grandmother making mango pickles. After she bottled the pickle, her grandmother poured oil on top of the pickle before closing the lid. Paheli wanted to know why oil was poured.

**[Hint: Oil prevents bacteria from attacking the pickle and spoiling it.]**

3. There are some insects and animals which act as carriers of disease-causing microbes. Housefly is one such carrier. The flies sit on the garbage and animal excreta. Pathogens stick to their bodies. When these flies sit on uncovered food they may transfer the pathogens. Whoever eats the contaminated food is likely to get sick. So, it is advisable to always keep food covered. Avoid consuming uncovered items of food. Another example of a carrier is the female Anopheles mosquito which carries the parasite of malaria (Plasmodium). Female Aedes mosquito acts as the carrier of the dengue virus. All mosquitoes breed in water. Hence, one should not let water collect anywhere, in coolers, tyres, flower pots, etc. By keeping the surroundings clean and dry we can prevent mosquitoes from breeding.

a) Why are carriers of pathogens harmful to us?

**[Hint: Carriers can transfer disease-causing microbes from an infected person to a healthy person.]**

b) Name the carriers of i) malarial parasite and ii) dengue virus.

**[Hint: i) Female Anopheles mosquito ii) Female Aedes mosquito]**

c) How can we control the spread of malaria or dengue?

**[Hint: We should not let water collect anywhere. By keeping the surroundings clean and dry we can prevent mosquitoes from breeding.]**

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