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| Class: VIII | DEPARTMENT: SCIENCE 2023-24 | DATE: 26-10-2023 |
| WORKSHEET NO: 10 WITH ANSWERS | TOPIC: MICROORGANISMS: FRIEND AND FOE | NOTE: A4 FILE FORMAT |
| NAME OF THE STUDENT: | CLASS & SEC: | ROLL NO. |

I. OBJECTIVE-TYPE QUESTIONS

1. A trash can contains the following materials:



- 1. Plastic straw
- 2. Aluminium foil
- 3. Apple peels
- 4. Chicken bone
- 5. Glass bottles
- 6. Tissue paper

Select the materials that the microorganisms can decompose:

- a. 1,3 and 5
- b. 3,4 and 6**
- c. 1,2 and 5
- d. 4,5 and 6

2. Suman wants to see how quickly carrots lose colour. Loss of colour shows rotting of carrot.

She observes carrot slices on a plate under three different conditions as shown below.



Under the sun



In a moist room at 25°C



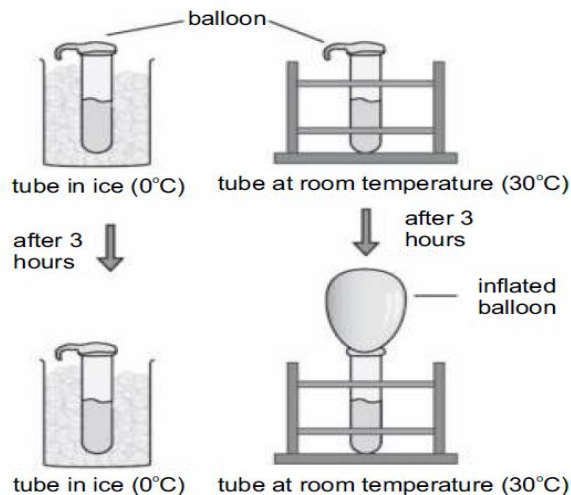
In the refrigerator

She notes how long the carrot slices on each plate take to change colour.

| | Under the sun | In a moist room at 25°C | In the refrigerator |
|------------------------------------------|---------------|-------------------------|---------------------|
| Time carrot slices take to change colour | 2 days | 5 days | 8 days |

What can Suman conclude from her activity?

- Carrots when kept under the sun do not rot easily.
 - Carrots kept in the refrigerator rot easily.
 - Carrots take more time to lose colour under cold conditions.**
 - Carrots can be best preserved in hot and moist conditions.
3. Manoj adds some yeast to two test tubes containing sugar solution. One test tube is kept in ice and the other at room temperature. The picture shows what happens after three hours.



What is Manoj investigating?

- Does yeast grow in sugar solution only?
 - Does yeast convert sugar into alcohol?
 - Does temperature affect the growth of yeast?**
 - Which gas is produced as yeast grows in sugar solution?
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?
- Antibiotics are used against viral infections.
 - Antibiotics are used against bacterial infections.**
 - Antibiotics take time to cure the infection.
 - Antibiotics are to prevent infections rather than to cure them.
5. A student takes 2 pots M and N. He puts plant waste in pot M and plastic products in a pot N. He places both the pots in an open area for 3- 4 weeks and observes that the content

in Pot M is converted into manure while the content in Pot N remains the same.

What can be a likely reason for the production of manure in pot M?

- Microorganisms decompose plant waste faster than plastic.
- Microorganisms degrade plastic slowly compared to plant waste
- Microorganisms only degrade plastic waste to produce manure
- Microorganisms only decompose plant waste into manure.**

6. A student is making a list of diseases caused by different microorganisms in plants and humans. Which table correctly shows the diseases listed by the student?

a.

| Human | Plant |
|----------------------------------------------|-------------------------------------------------------------|
| Chicken pox - bacteria Typhoid - bacteria | Yellow vein mosaic of okra - fungi Rust of wheat - virus |

b.

| Human | Plant |
|-------------------------------------------|-------------------------------------------------------------|
| Chicken pox - virus Typhoid - bacteria | Yellow vein mosaic of okra - virus Rust of wheat - fungi |

c.

| Human | Plant |
|----------------------------------------------|-------------------------------------------------------------|
| Chicken pox - bacteria Typhoid - bacteria | Yellow vein mosaic of okra - fungi Rust of wheat - fungi |

d.

| Human | Plant |
|-------------------------------------------|----------------------------------------------------------------|
| Chicken pox - virus Typhoid - bacteria | Yellow vein mosaic of okra - bacteria Rust of wheat - virus |

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

- Both A and R are true and R is the correct explanation of the assertion.
- Both A and R are true but R is not the correct explanation of the assertion.
- A is true but R is false.
- A is false but R is true

7. Assertion(A): Milk is converted into curd by bacteria.

Reason(R): *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(A): When an antigen enters our body, antibiotics are produced against it.

Reason(R): Chicken pox is caused by a virus.

Ans: iv) A is false but R is true

9. Assertion(A): We must preserve food to prevent it from being spoilt.

Reason(R): 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(A): Disease-causing microorganisms are called pathogens.

Reason(R): Pathogens are helpful to mankind.

Ans: iii) A is true but R is false

II. VERY SHORT QUESTIONS (2M):

1. Where do microorganisms live?

[Hint: They can survive in all types of environments, ranging from ice-cold climates to hot springs and deserts to marshy lands. They are also found inside the bodies of animals including humans. Some microorganisms grow on other organisms while others exist freely. Microorganisms like amoeba can live alone, while fungi and bacteria may live in colonies]

2. 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. These substances are again used by other plants and animals. Thus, microorganisms can be used to degrade harmful and smelly substances and thereby clean up the environment]

3. While returning from school, Boojho ate chaat from a street hawker. When he reached home, he felt ill and complained of stomach ache. What could be the reason?

[Hint: The probable reason is that the chaat was contaminated by pathogenic microbes due to unhygienic conditions near the shop or the utensil used for serving could have been contaminated.]

4. 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.]

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 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.]

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

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

7. Describe the role of Rhizobium in maintaining soil fertility.

[Hint: Rhizobium forms a symbiotic association with the roots of leguminous plants and converts the atmospheric nitrogen into simple soluble forms making it available for the plant]

III. SHORT ANSWER TYPE QUESTIONS: (3M)

1. Why does sugar solution with yeast powder become alcoholic in taste?

[Hint: Sugar solution becomes alcoholic in taste because yeast synthesises an alcoholic compound from the sugar. This process is known as fermentation. It is used for making wine. The substances on which yeast is grown for wine production are grapes, grains of wheat, barley, etc.]

2. Give reasons:

a) We should keep a handkerchief on the nose and mouth while sneezing.

Hint: When a person suffering from common cold sneezes, the fine droplets of moisture containing thousands of viruses are spread in the air, these viruses may enter the body of a healthy person while breathing, thus we should keep a handkerchief on the mouth, and nose so that viruses may not spread in the air and enter into healthy person's body to make him sick.

b) We should avoid consuming uncovered food items.

Hint: Houseflies sit on the garbage and animal excreta where pathogens stick to their bodies and these pathogens get transferred to uncovered food when these flies sit on uncovered food items the person consuming these foods falls sick.

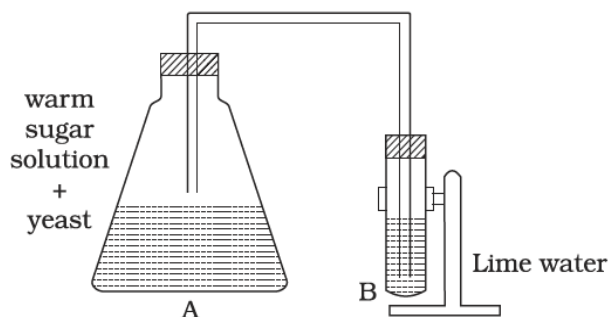
c) A mango gets spoilt or rotten after a few days but a mango pickle does not spoil for a long time.

Hint: Mango pickles contain salt which acts like a preservative. The oil prevents the entry of fungi and bacteria from attacking the pickle and spoiling it.

3. Describe how curd is made from milk.

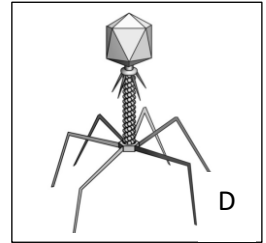
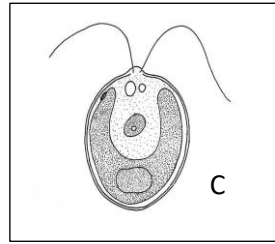
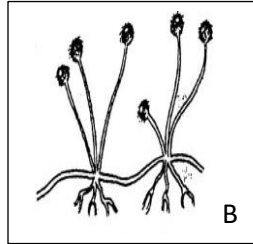
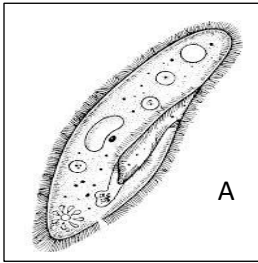
[Hint: When a small amount of pre-made curd is added to warm milk, then the lactobacillus bacterium present in curd multiplies in milk and converts it into curd. During this process, the lactobacillus bacterium acts on the lactose sugar present in milk and converts it into lactic acid. This lactic acid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

4. Observe the setup given in the figure and answer the following questions.



- What happens to the sugar solution in A?
 - Which gas is released in A?
 - What changes will you observe in B when the released gas passes through it?
- [Hint: a) Yeast causes fermentation converting sugar into alcohol and carbon dioxide. b) Carbon dioxide c) Lime water turns milky.]**

5. Identify the given organisms and mention their groups:



**Hint: A- Paramecium, group- protozoa B- Rhizopus (bread mould), group- fungus
C- Chlamydomonas, group- algae D- Bacteriophage, group – virus**

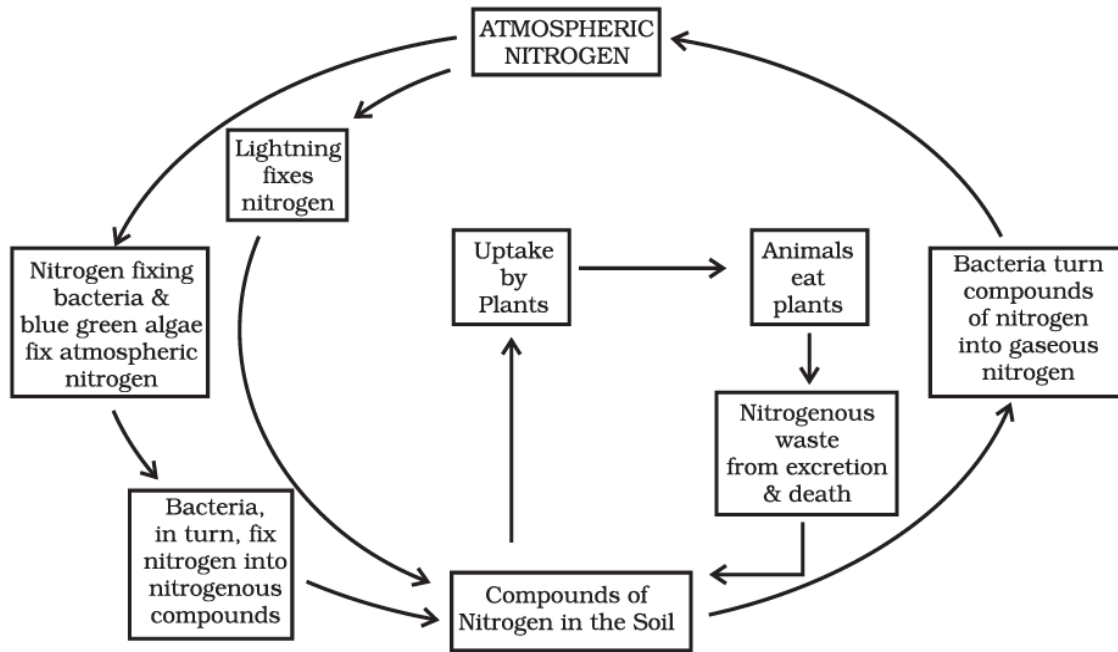
IV. LONG ANSWER TYPE QUESTIONS. (5M):

1. Explain the process of the nitrogen cycle with the help of a neat diagram.

[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.**

5. Certain other bacteria convert some parts of them 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. 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 which 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 STUDY-BASED QUESTIONS:

1. Megha, a class VIII student was asked to submit a project report on mosquito-transmitted diseases. She visited a nearby hospital where her aunt was a nurse. Her aunt took her to a patient suffering from malaria. Megha consulted with the doctor and got the information that a protozoan called Plasmodium is responsible for malaria. It lives in the liver and blood of the person who has been infected by this disease. A female Anopheles mosquito when sucks blood from the infected person, Plasmodium along with blood, is taken into its stomach.

i) The disease caused by protozoa is

a) Tuberculosis

b) Polio

c) Typhoid

d) Malaria

ii) Which organism acts as a carrier in transmitting malarial parasites?

[Hint: Female *Anopheles* mosquito]

iii) Explain how malaria is transmitted to humans.

[Hint: A protozoan called Plasmodium is responsible for malaria. It lives in the liver and blood of the person who has been infected by this disease. A female Anopheles mosquito when sucks blood from the infected person, Plasmodium along with blood, is taken into its stomach. The Plasmodium, here, multiplies itself and reaches the salivary gland of the mosquito. Now, when this mosquito bites a healthy person, it injects Plasmodium along with saliva into him. The healthy person then gets an attack of malaria. In this way, malaria is transmitted to humans.]

iv) Mosquitoes can be controlled by preventing stagnation of water though they do not live in water. Why?

[Hint: Water stagnation is the process in which clean water gets collected in a small area. Although mosquitoes live on land, they lay eggs in clean water, and the stagnant water provides a breeding ground for them. Their larvae grow in clean water. Therefore, by preventing the stagnation of water, we can prevent mosquitoes from breeding. As a result, mosquitoes can be controlled.]

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