MICROORGANISMS FRIEND AND FOE

1. Fill in the blanks:

a. Microorganisms can be seen with the help of a_____.
Ans: Microscope

b. Blue green algae fix_____directly from air to enhance fertility of soil.
Ans: Nitrogen

c. Alcohol is produced with the help of_____.
Ans: Yeast

d. Cholera is caused by_____.
Ans: Bacteria

2. Tick the correct answer:

a. Yeast is used in the production of
- **i. Sugar**
- **ii. Alcohol**
- **iii. Hydrochloric acid**
- **iv. Oxygen**

Ans: (ii) Alcohol.
Yeast is used in the production of alcohol, which converts sugar into ethanol and carbon dioxide.

b. The following is an antibiotic
- **i. Sodium bicarbonate**
- **ii. Streptomycin**
- **iii. Alcohol**
- **iv. Yeast**

Ans: (ii) Streptomycin
Streptomycin is an antibiotic, sodium bicarbonate is an antacid, alcohol is a drug and yeast is a fungus.

c. Carrier of malaria-causing protozoan is

i. Female Anopheles mosquito
ii. cockroach
iii. Housefly
iv. Butterfly

Ans: (i) Female Anopheles mosquito
Female Anopheles mosquito carries malaria-causing protozoan which causes malaria in humans.

d. The most common carrier of communicable diseases is

i. Ant
ii. Housefly
iii. Dragonfly
iv. Spider

Ans: (ii) Housefly
Ant, dragonfly and spider do not carry any diseases.

e. The bread or idli dough rises because of

i. Heat
ii. Grinding
iii. Growth of yeast cells
iv. Kneading

Ans: (iii) Growth of yeast cells
The yeast cells are microorganisms that grow, respire and release carbon dioxide, which are responsible for raising the bread or idli dough.

f. The process of conversion of sugar into alcohol is called

i. Nitrogen fixation
ii. Moulding
iii. Fermentation
iv. Infection

Ans: (iii) Fermentation
Fermentation process involves the conversion of sugar into alcohol.

3. Match the organisms in Column I with their action in Column II.

Column I	Column II
1. Bacteria	a. Fixing of nitrogen
2. Rhizobium	b. Setting of curd
3. Lactobacillus	c. Baking of bread
4. Yeast	d. Causing malaria
5. A protozoan	e. Causing Cholera
6. A virus	f. Causing aids

Ans:

Column I	Column II
1. Bacteria	e. Causing cholera
2. Rhizobium	a. Fixing of nitrogen
3. Lactobacillus	b. Setting of curd
4. Yeast	c. Baking of bread
5. A protozoan	d. Causing malaria
6. A virus	f. Causing aids

1. Bacteria is a microorganism which causes the disease called cholera.
2. Rhizobium is a bacteria which is useful in the fixation of atmoshperic nitrogen in the soil.
3. Lactobacillus produces lactic acid by converting sugar that coagulates and partially digest the milk protein and giving rise to curd.
4. The yeast cells are microorganisms that grow, respire and release carbon dioxide, which are responsible for raising and baking bread.
5. A protozoan is a microorganism carried by female anopheles mosquitoes which causes malaria.
6. A virus named HIV causes AIDS

4. Can microorganisms be seen with the naked eye? If not, how can they be seen?

Ans: No, microorganisms cannot be seen with naked eye as they are minute organisms. But microorganisms can be seen through a microscope.

5. What are the major groups of microorganisms?

Ans: There are five major groups of microorganisms. They are enlisted as:

1. Bacteria:
    a. It is a single celled organism.
    b. They can be spiral, rod shaped, spherical shaped, comma shaped.
    c. It causes diseases like cholera, tuberculosis.
2. Fungi:
    a. Fungi are mostly multicellular organisms which cause several diseases.
    b. The moulds formed on breads are a type of fungi.

3. Protozoa:
    a. Protozoa can either be unicellular or multicellular.
    b. Amoeba and Plasmodium are examples for a protozoa.
    c. They are harmful to humans as well as other organisms.
4. Virus:
    a. Viruses are disease causing microorganisms which can only divide inside a host organism/cell.
    b. It can affect plants as well as animals or humans.
    c. HIV virus in humans and TMV virus in plants are examples of viruses.
5. Algae:
    a. They are the only microorganisms which are multicellular and have photosynthetic pigments.
    b. They are also known as precursors of plants.
    c. Spirogyra and Chlamydomonas are some examples of algae.

6. Name the microorganisms which can fix atmospheric nitrogen in the soil.

Ans: The microorganisms that can fix atmospheric nitrogen in the soil are bacteria. Rhizobium is one such bacteria. They help in making it to nitrogenous compounds that can be taken up by the plants.

These nitrogenous compounds are then used by the plants to make proteins and other important compounds.

Rhizobacteria and Blue green algae are examples of bacteria that have the capacity to fix nitrogen.

7. **Write 10 lines on the usefulness of microorganisms in our lives.**

Ans: Usefulness of microorganisms:

1. Microorganisms such as rhizobium bacteria are used to increase soil fertility by fixing atmospheric nitrogen.
2. They are also useful in preparing many medicines and antibiotics.
3. Yeast is a microorganism which is used at home to make batter for fermented food.
4. Various fungi are the one responsible for decaying the waste in the nature, they obtain nutrients from the dead and decompose the waste.
5. They are used in making wine, break, pickles and other food products.
6. Lactobacillus bacteria is mainly used at homes to make curd from milk.
7. Certain microbes are also used in the biological treatment of sewage and industrial effluent.
8. Some microorganisms are taken as probiotics which provide health benefits.

9. Bacteria are also involved in making cheese.
10. Acetobacter acetic is used for producing acetic acid from alcohol.

8. Write a short paragraph on the harms caused by microorganisms.

Ans: The harms caused by microorganisms are enlisted below:

1. They can cause diseases in humans. Some diseases caused by bacteria are tuberculosis, cholera, typhoid, etc.
2. There are viruses that can affect the cattle by causing foot and mouth disease in them.
3. Microorganisms tend to reduce the productivity of the plants like wheat, rice, apple, sugarcane, etc.
4. When the microorganisms are present in our body, they can harm the body cells by producing harmful substances.
5. There are microbes that can spoil food as well as other materials.

9. What are antibiotics? What precautions must be taken while taking antibiotics?

Ans: Antibiotics are the drugs or medicines that are taken to kill disease causing microorganisms. They are produced from the microorganisms. There are different types of antibiotics that are used to protect against each type of microorganisms like bacteria, fungus and other organisms and kill them.

Some examples for antibiotics are Penicillin, Tetracycline, Streptomycin and so on.

The precautions to be taken while taking antibiotics are:

1. They should be taken under the supervision of a qualified doctor.
2. The prescribed course of antibiotics should be taken completely for good results.
3. Taking the correct dosage of antibiotics is important. Any dose higher than or less than the prescribed dosage can harm the body.

Extended Learning — Activities and Projects

1.Pull out a gram or bean plant from the field. Observe its roots.You Willround structures called root nodules on the roots. Draw a diagram of the and show the root nodules.

Ans: Gram/bean are the type of leguminous plants. When we'll observe its roots we'll see some "round" like structures that are called root nodules . Refer to the attachment for the diagram.)

2: Collect the labels from the bottle of jams and jellies. Write down the list of contents printed on the label

Ans: From the labels of bottle of jams and jellies that I collected.

The list of contents printed in the label of commercial bottles of jam and jellies is given below.

The ingredients are listed as

"Sugar, tapioca syrup, citrus pectin, citric acid, natural flavors, sodium citrate, fruit juice, , fruit juic

3: Visit a doctor. Find out why antibiotics should not be overused prepare a Short Report

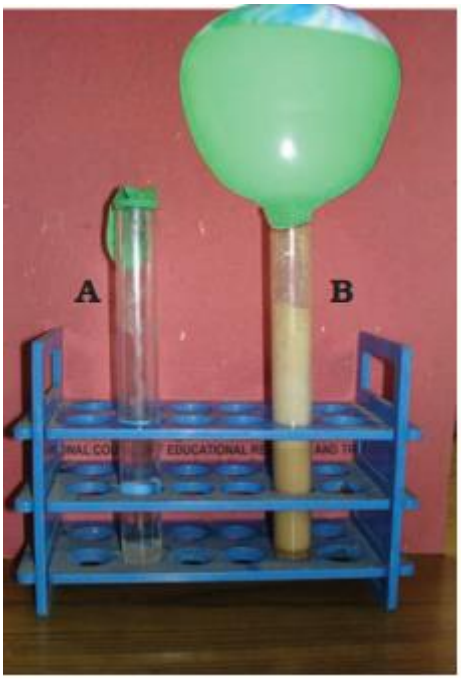
Ans: What are antibiotics, exactly? Antibiotics are specialised medications that are used to eradicate or stop the spread of germs that are responsible for life-threatening illnesses. When antibiotics are taken often, adverse effects occur. Similar to nausea, which indicates a want to vomit. These a

4: Project :Requirements – 2 test tubes, marker pen, sugar, yeast powder, 2 balloons and lime water.

Take two test tubes and mark them A and B. Clamp these tubes in a stand and fill them with water leaving some space at the top. Put two spoonfuls of sugar in each ofthe test tubes. Add a spoonful of yeast in test tube B. Inflate the two

balloons incompletely. Now tie the balloons on the mouths of each test tube. Keep them in a warm place, away from sunlight. Watch the set up every day for next 3-4 days. Record your observations and think of an explanation.

Now take another test tube filled 1/4 with lime water. Remove the balloon from test tube B in such a manner that gas inside the balloon does not escape. Fit the balloon on the test tube and shake well. Observe and explain.



Ans: This experiment is known as the Sugar Yeast Experiment,

Tube A (no sugar), Tube B (sugar)

As the yeast eats the sugar (tube B), and breaks it down to ethanol and carbon dioxide. The gas (carbon dioxide) fills the test tub and, the more sugar is added the more gas is created. The yeast used in