

Chapter: 8

Q.1 Fill in the blank and rewrite the completed statements

3

- 1 Leguminous plants can produce more proteins due to bacterium

Ans Leguminous plants can produce more proteins due to bacterium **Rhizobium**.

- 2 Toxins of fungal origin are called

Ans Toxins of fungal origin are called **mycotoxins**.

- 3 Yeast reproduces asexually by the method.

Ans Yeast reproduces asexually by the **budding** method.

Q.2 Find the odd one out

3

- 1 Pneumonia, diphtheria, chicken pox, cholera.

Ans Pneumonia, diphtheria, chicken pox, cholera - **Chicken pox**

- 2 Root rot, rust (tambora), rubella, mosaic.

Ans Root rot, rust (tambora), rubella, mosaic - **Rubella**

- 3 Lactobacilli, rhizobia, yeast, clostridia.

Ans Lactobacilli, rhizobia, yeast, clostridia - **Clostridia**

Q.3 Match the pair

2

1	Column 'A'	Column 'B'
	i. Penicillium	a. Nitrogen fixation
	ii. Yeast	b. Production of antibiotics
		c. Bakery products

Ans	i. Penicillium	Production of antibiotics
	ii. Yeast	Bakery products

2	Column 'A'	Column 'B'
	i. Rhizobium	a. Food poisoning
	ii. Clostridium	b. Nitrogen fixation
		c. Production of antibiotics

Ans	i. Rhizobium	Nitrogen fixation
	ii. Clostridium	Food poisoning

Q.4 Name the following

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- 1 Write the names of microbes found in following food materials.
Bread

Ans Bread - **Yeast**

- 2** Write the names of microbes found in following food materials.
Spoiled potato curry

Ans Spoiled potato curry - **Clostridium**

- 3** Write the names of microbes found in following food materials.
Idli

Ans Idli - **Yeast**

- 4** Write the names of microbes found in following food materials.
Root nodules of leguminous plants

Ans Root nodules of leguminous plants - **Rhizobium**

- 5** Write the names of microbes found in following food materials.
Dosa

Ans Dosa - **Yeast**

- 6** Write the names of microbes found in following food materials.
Yoghurt

Ans Yoghurt - **Lactobacilli**

Q.5 **Laws/define/principles**

6

- 1** Define 'Antibiotic'.

Ans i. Carbon compounds obtained from some bacteria and fungi for destroying or preventing the growth of harmful micro-organisms are called 'antibiotics'.
ii. Antibiotics mainly act against bacteria, however some can destroy protozoa.
iii. Some antibiotics are useful against a wide variety of bacteria (broad spectrum antibiotics) while some act against specific pathogenic micro-organisms (Narrow spectrum antibiotics).

- 2** Define Broad- spectrum antibiotics.

Ans Some antibiotics are useful against a wide variety of bacteria. They are called broad- spectrum antibiotics. Examples are ampicillin, amoxicillin, tetracycline, etc. When the pathogen cannot be identified even though the symptoms of disease are visible, broad spectrum antibiotics are used.

- 3** Define fermentation.

Ans Fermentation is a metabolic process that uses sugar in the absence of oxygen.
The products are organic acids, gases, or alcohol.
It occurs in yeast and bacteria, and also in oxygen-starved muscle cells, as in the case of lactic acid fermentation.

Q.6 **Write Short Notes**

2

- 1** Write note on vaccines given to infants.

Ans i. The vaccines given to infants are polio vaccine, measles and chicken pox vaccine, hepatitis vaccine, BCG vaccine, diphtheria vaccine, influenza vaccine.
ii. These vaccines are given to infants as they strengthen the immune response of infants against a specific disease.

Q.7 **Give scientific reasons**

6

- 1** Foam accumulates on the surface of 'dal' kept for a long time in summer.

Ans i. Microscopic spores of fungi are present in the air. If there is sufficient moisture, spores germinate on the eatables or any substrate.
ii. The microbes in the air carry out fermentation of the sugars present in the 'dal' and the foam appeared are of the carbon dioxide gas.

- 2** Naphthalene balls kept with clothes to be put away the insects or microbes.

- Ans** i. Naphthalene is an organic compound which is used to keep the insects or microbes away from any non-eatable substance to store for a long time.
 ii. As the clothes when put away, there are chances of them being affected by the fungal spores present in the air and this can be prevented by using moth balls also known as naphthalene balls.
- 3** It necessary to safely store the pathogens of a disease against which vaccines are to be produced.

- Ans** i. Disease causing pathogens are variable and can affect any individual causing lifelong problems.
 ii. When the pathogen in dead form is injected through vaccine, the body develops immunity against them without being infected.
 iii. So when the pathogen naturally affects the individual, the immunity is already developed by the person and the body is immune to the disease.
 iv. Therefore, It necessary to safely store the pathogens of a disease against which vaccines are to be produced.

Q.8 Suggest remedies / measures

6

- 1** Write about fungal diseases, their mode of infection and preventive measures.

- Ans** i. There are various fungal disease that can be caused on the different body parts such as hairs, epidermis, etc.
 ii. **Dandruff** is a fungal infection caused in the hair. The fungi survives on the scalp on which hair grows and keratin components of hair.
 iii. **Scabies** is another fungal infection which is seen in many people.
 iv. **Ringworm**, a fungal disease is observed between the fingers especially on the feet in the monsoon due to high moisture exposure.
 v. The mode of infection of these fungal diseases is by coming in contact with infected person or his/her belongings like clothes, etc.
 vi. The preventive measures that can be undertaken to avoid such infections are to practice personal hygiene and avoiding contact with infected person.

- 2** Write down the modes of infection and the preventive measures against the following diseases.

Fungal Disease	Mode of infection	Preventive measures
Dandruff, Ringworm
Hepatitis
Bird Flu

Ans	Fungal Disease	Mode of infection	Preventive measures
	Dandruff, Ringworm	Contact with infected person or his/her belongings like clothes.	Personal hygiene, avoiding contact with infected person.
	Hepatitis	Contaminated water and food.	Clean and filtered water, proper storage of food.
	Bird Flu	Contact with infected birds and animals	Personal hygiene, properly cooked meat.

Q.9 Answer the following

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- 1** How is a vaccine produced?

- Ans** i. Vaccines are made using the disease causing viruses or bacteria which are weakened (which have lost their disease causing ability) or killed.
 ii. First step in vaccine production is Antigen generation (i.e. proteins responsible for provoking immune response). Viruses are grown in primary cells (e.g. chicken eggs for the influenza vaccine), bacteria is grown in bioreactors.
 iii. Antigen is isolated from the cells used to create it.
 vi. Vaccine is made by adding adjuvant, stabilizers and preservatives, Adjuvants increase immune response of the antigen; stabilizers increase the vaccine's storage life; and preservatives allow for the use of multi-doses vials.
 v. Vaccines are continually monitored for safety.

- 2** How do antibiotics cure disease?

- Ans** i. Vaccines are made using the disease-causing viruses or bacteria which are weakened (which have lost their disease causing ability) or killed.
 ii. First step in vaccine production is Antigen generation (i.e. proteins responsible for provoking immune

response). Viruses are grown in primary cells (e.g. chicken eggs for the influenza vaccine), bacteria is grown in bioreactors.

iii. Antigen is isolated from the cells used to create it.

iv. Vaccine is made by adding adjuvant, stabilizers and preservatives. Adjuvants increase immune response of the antigen; stabilizers increase the vaccine's storage life; and preservatives allow for the use of multi-dose vials.

v. Vaccines are continually monitored for safety.

3 Are the antibiotics given to humans and animals the same? Why?

Ans i. Immunity of an organisms depends on the type of the food animals survives on.

ii. The body of the organism differs in terms of immunity and thus vaccination and the medicines also differs.

iii. Example, a horse vaccine cannot be given to the humans and the vaccines for humans cannot be given to the cattle.

iv. Also the antibiotic effect varies from organism to organism.

v. Cattle like cows and buffaloes already have bacteria in their gut which helps in their food digestion and thus any antibiotic that harms this bacteria can weaken the animals.

vi. On the other hand, the antibiotic can be given to the humans if the same bacteria causes infection.

4 Why is it necessary to safely store the pathogens of a disease against which vaccines are to be produced?

Ans i. Pathogens are harmful disease causing bacteria, viruses or any other micro-organisms.

ii. Using various research techniques these micro-organisms can be used for vaccine preparation.

iii. If these pathogens are released in air accidentally, then they may spontaneously spread disease to various places before the necessary vaccine is available.

Therefore, it is necessary to safely store the pathogens of a disease against which vaccines are to be produced.

Q.10 Extra data

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1 What is fermentation?

Ans i. Fermentation is a chemical process in which one type of carbon compound is converted into another type of carbon compound by the action of micro organisms.

ii. Heat is generated in this process and carbon dioxide and other gases are released.

iii. Fermentation is used in various processes such as yoghurt making, alcohol (ethanol) production from grains and fruits, bread making, production of acetic acid, citric acid, lactic acid, vitamins, antibiotics etc.

2 What are 'broad spectrum antibiotics'?

Ans i. Antibiotics specifically act against bacteria.

ii. Certain antibiotics are useful against a wide variety of bacteria. They are known as Broad-spectrum antibiotics.

iii. Examples of Broad-spectrum antibiotics include ampicillin, amoxicillin, tetracycline, etc.

iv. Broad spectrum antibiotics are used when the pathogen cannot be identified even though the symptoms of disease in an individual are visible.