Useful and Harmful Microbes

Exercises

Q. 1. Complete the statements using the proper option from those given below. Explain the statements.

(Mycotoxins, budding, rhizobium)
A. Yeast reproduces asexually by the ..... method.
B. Toxins of fungal origin are called..... .
C. Leguminous plants can produce more proteins due to..... .

Answer : A. Yeast reproduces asexually by the ....budding..... method. In budding, a small knob like structure bulge out from the parent yeast. This swollen structure is called bud. The bud grows and gets detach from the parent and becomes new yeast.

B. Toxins of fungal origin are called....mycotoxins.....

Some species of fungi example Mucor, grow on food items such as bread pickles, jam, sauce, chutney, etc. They use the nutrients of the food for their growth and reproduction. They also produce some poisonous chemicals in the food items. These chemicals are called mycotoxins

C. Leguminous plants can produce more proteins due to....rhizobium….

Rhizobium is a bacterium (plural bacteria) grows in the root nodules (bulb like structures) of plants such as soybean, ground nut, gram, etc. Rhizobium provides nitrates and amino acids to the plant and it takes carbohydrate from plants in exchange.

Q. 2. Write the names of microbes found in following food materials.
Yoghurt, bread, root nodules of leguminous plants, idli, dosa, spoiled potato curry.

Answer :

Food Material	Microbe
Yoghurt	Lactobacillus bacterium
Bread	Yeast, a fungus (plural fungi)
Root nodules of legumes	Rhizobium, a bacterium
Idli	Yeast, a fungus
Dosa	Yeast, a fungus
Spoiled potato curry.	Clostridium, a bacterium

Q. 3. Identify the odd word out and say why it is the odd one?

A. Pneumonia, diphtheria, chicken pox, cholera.
B. Lactobacilli, rhizobia, yeast, clostridia.
C. Root rot, rust (tambera), rubella, mozaic.

Answer : A. The odd one out is: Chicken pox.

Explanation: Chicken pox is a disease caused by virus. Pneumonia, diphtheria, and cholera are caused by bacteria.

B. The odd one out is: Yeast.

Explanation: Yeast is a fungus. Lactobacilli, rhizobia, and clostridia are bacteria.

C. The odd one out is: Rubella.

Explanation: Rubella is a disease caused by bacteria that occurs in humans. Root rot, rust (tambera), and mosaic are the plant diseases caused by fungi.

Q. 4. Give scientific reasons.

A. Foam accumulates on at the surface of 'dal' kept for a long time in summer.
B. Why are naphthalene balls kept with clothes to be put away?

Answer : A. Foam gets accumulated on the surface of the dal, this happens due to denaturation of protein at high temperature in summer. Denaturation is a process in which protein molecules loses its structure due to breaking of weak chemical bonds.

B. Naphthalene balls are organic compound which have the properties of sublimation. Sublimation is a process in which a solid matter changes to gas without in between liquid phase. The gas which releases from naphthalene balls keeps insect away from the kept away clothes.

Q. 5. Write down the modes of infection and the preventive measures against fungal diseases.

Answer :

Name of the disease	Mode of infection	Preventive measures
Dandruff, ringworm and scabies	• By making contact with infected person. • By using belongings of infected person such as towels, hanky.	• Keep yourself clean. • Keep away from infected person. • Use of medicine which attacks on fungi

Q. 6. Match the pairs.

'A' group	'B' group
1 Rhizobium	Nitrogen fixation
2 Clostridium	Food poisoning
3 Penicillium	Production of antibiotics
4 Yeast	Bakery products

Answer :

'A' group	'B' group	Explanation
Rhizobium	Nitrogen fixation	Rhizobium provides nitrates and amino acids to legumes.
Clostridium	Food poisoning	Spoil the cooked food by releasing toxin in it
Penicillium	Production of antibiotics	Antibiotics are chemical compound which kills bacteria
Yeast	Bakery products	It makes the bread dough soft and rise

Q. 7. Answer the following questions.

A. Which vaccines are given to infants? Why?

B. How is a vaccine produced?

C. How do antibiotics cure disease?

D. Are the antibiotics given to humans and animals the same? Why?

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

Answer :

A. The following vaccines are given to infants which protects them the various diseases. Infant's body is weak, it cannot protect itself from the attacks of harmful microorganisms. Hence, infants are given vaccines.

Vaccines	Provide protection against
Hepatitis B (HepB)	Hepatitis B
Diphtheria, tetanus, and Pertussis (DTaP)	Diphtheria, tetanus, and Pertussis (whooping cough)
Haemophilus influenzae type b (Hib)	Influenza
Prevnar (PCV)	Pneumonia
Polio (IPV)	Polio myelitis

B. A vaccine is a biological preparation which protect against a particular disease. It is made out of half killed or weakened disease-causing microorganism. For example, polio vaccine is made from half killed or weekend polio virus. A particular vaccine is prepared to protect against for particular disease.

C. Antibiotics are used to control harmful bacteria. Antibiotics control bacteria either by killing them or by preventing them from growth.

D. Some antibiotics are only used by humans and some only used for animals. Whereas some antibiotics such as Amoxicillin can be used by human and animals both but in different doses. For example, Amoxicillin available in 250mg and 500mg for humans and 5-10mg for dogs and cats.

E. In vaccine, the pathogen are half killed or weakened disease causing microorganism Sometimes due to unsafe storage, it may get activated and may cause vaccine associated disease.

Q. 8. Answer the following questions in brief.

A. What are 'broad spectrum antibiotics'?
B. What is fermentation?
C. Define 'Antibiotic'.

Answer : A. The antibiotics which are used to control variety of bacteria, not just specific bacteria are called 'broad spectrum antibiotics'. For examples ampicillin, amoxicillin, tetracycline, etc.

B. Fermentation is a process in which microorganisms such as bacteria and yeast, convert sugar (carbohydrate) into organic acid, alcohol etc.

Examples:

i. The lactobacilli bacteria convert lactose (milk sugar) into lactic acid.

ii. Yeast convert the carbohydrates into alcohol and carbon dioxide.

C. Antibiotics are carbon compounds which are obtained from some bacteria and fungi and are used kill or stop the growth of harmful micro-organisms. For example: penicillin is an antibiotics which is obtained from a fungus *Penicillium*is used to kill bacteria.

Q. 9. Collect information about generic medicines and discuss them in the class.

Answer : Generic medicines are those medicines which are for sale in the market without brand names. Generic medicines are generally less expensive. In safety, purity and effectiveness are exactly the same as branded medicines. It can be understood with an example, Calpol is a brand for paracetamol tablets. Generic medicine do not have brand name but contains the same parcetamol medicine.