

CBSE Test Paper 03
Ch-10 Microbes in Human Welfare

1. First organic acid produced by microbial fermentation is
 - a. Tartaric acid
 - b. Citric acid
 - c. Lactic acid
 - d. Acetic acid
2. The common nitrogen-fixer in paddy fields is
 - a. Azospirillum
 - b. Rhizobium
 - c. Frankia
 - d. Oscillatoria
3. Human insulin is being commercially produced from a transgenic species of
 - a. Escherichia
 - b. Rhizobium
 - c. Mycobacterium
 - d. Lactobacillus
4. The biological control of agricultural pests, unlike chemical control is
 - a. Very expensive
 - b. Self-perpetuating
 - c. Polluting
 - d. Toxic
5. Humulin is a
 - a. Protein
 - b. Carbohydrates
 - c. Fat
 - d. Vitamin
6. Tissue plasminogen activator is
 - a. A chemical that stimulates tissue differentiation
 - b. Amino acid
 - c. A vitamin
 - d. An enzyme

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7. The puffed-up appearance of dough used for making foods such as dosa and idli is due to the
 - a. Production of CO_2 gas
 - b. Production of ethanol
 - c. Production of O_2
 - d. Production of SO_2
 8. Which one of the following is the baker's yeast used in fermentation? *Saccharum barberi*, *Saccharomyces cerevisiae*, Sonalika
 9. Find out the name of the microbes from which cyclosporine A and Statins are obtained.
 10. Name any two species of fungus, which are used in the production of the antibiotics
 11. How do methanogens help in producing biogas?
 12. Bacteria can not be seen with naked eyes, but those can be seen with the help of microscope. If you have to carry a sample from your home to your biology lab to demonstrate the presence of microbes under a microscope. Which sample would you carry and why?
 13. During the secondary treatment of the primary effluent how does the significant decrease in BOD occur?
 14. What is the difference between Bt and Bt cotton? Explain the use of Bt as a biological control agent?
 15. Explain the role of baculoviruses as biological control agents. Mention their importance in organic farming.

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Answer

1. c. Lactic acid, **Explanation:** Lactic acid occurs in two isomeric forms i.e. L (+) and D (-) isomers, and as a racemic mixture (DL-lactic acid). The isolation of lactic acid from milk was done in 1798. It was the first organic acid produced by microorganisms in 1880. Today, lactic acid is competitively produced both by microbiological and chemical methods.
2. a. Azospirillum, **Explanation:** Nitrogen is obtained by plants either in nitrate or nitrite forms. Some microbes convert atmospheric nitrogen into nitrate and nitrite. The common nitrogen-fixing microbe in paddy field is Azospirillum.
3. a. Escherichia, **Explanation:** Human insulin is artificially prepared chemicals used by diabetic patients. This hormone is obtained from genetically engineered Escherichia bacterium that can reproduce rapidly.
4. b. Self-perpetuating, **Explanation:** The biological control of agricultural pest, unlike chemical control is called self-perpetuating as biological control has power to renew or perpetuate oneself of itself for indefinite length of time.
5. a. Protein, **Explanation:** Humulin is protein that contains insulin isophane and insulin regular. It's a manmade hormone that lowers the blood sugar level in blood.
6. d. An enzyme, **Explanation:** Tissue plasminogen activator is a protein involved in the breakdown of blood clots. It is a serine protease, an enzyme found on endothelial cells. This enzyme catalyse the clot breakdown.
7. a. Production of CO_2 gas, **Explanation:** The dough used for making dosa and idli is fermented by bacteria. The puffed appearance of dough is due to the production of CO_2 gas.
8. Saccharomyces cerevisiae

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	Drug	Function	Microbe
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1.	Cyclosporine -A	Immuno suppressive drug	Trichoderma polysporum
2.	Statin	Blood cholesterol lowering agent	Monascus purpureus

10. (i) *Penicillium notatum*
(ii) *Penicillium chrysogenum*
11. They produce a large quantity of methane along with CO_2 and hydrogen by acting on cellulosic compounds and biogas constitutes methane (60%) and CO_2 (40%). These bacteria are found in anaerobic sludge during sewage treatment and in the rumen of cattle.
12. Curd can be used as a sample for the study of microbes. Curd contains numerous lactic acid bacteria (LAB) or *Lactobacillus*. These bacteria produce acids that coagulate and digest milk proteins. A small drop of curd contains millions of bacteria, which can be easily observed under a microscope.
13. During secondary treatment the aeration allows vigorous growth of useful aerobic microbes into flocs. As they grow, the microbes consume a major part of the organic matter in the effluent so BOD is significantly decreased.
14. Bt stands for bacteria name *Bacillus thuringiensis* whose gene has been incorporated in cotton plant to make Bt cotton. These are available in sachets and are mixed with water and sprayed onto vulnerable plants such as brassicas and fruit trees, where these are eaten by the insect larvae. In the gut of the larvae, the toxin is released and the larvae get killed.
15. Baculoviruses produce narrow spectrum insecticides to kill insects and other arthropods which are species specific, does not affect other insects, mammals, birds or fishes.
Importance: Eliminates the use of chemical pesticides, conserves beneficial insects, integrated pest management.