



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-XII

Subject: Biology

Chapter Name : Microbes in Human Welfare (Chap : 8)

Total : 6 Marks (expected) [MCQ(2)-2 Marks, CBQ(1)-4 Marks]

Level - 1

MCQ Type :

1. The antibiotic penicillin was discovered by:
Ⓐ Alexander Fleming Ⓑ Louis Pasteur Ⓒ Robert Koch Ⓓ Edward Jenner

Hint : Accidental discovery from mould

2. Which bacterium converts milk into curd?
Ⓐ *Streptococcus* Ⓑ *Lactobacillus* Ⓒ *Rhizobium* Ⓓ *Clostridium*

Hint : Produces lactic acid

3. Activated sludge is rich in:
Ⓐ Fungi Ⓑ Viruses Ⓒ Aerobic microbes Ⓓ Protozoa only

Hint : Used in secondary sewage treatment

4. Biogas mainly contains:
Ⓐ CO_2 Ⓑ Methane Ⓒ Ethanol Ⓓ Oxygen

Hint : Major combustible gas

5. Which microbe is used in the production of bread?
Ⓐ *Rhizopus* Ⓑ *Yeast* Ⓒ *Lactobacillus* Ⓓ *Penicillium*

Hint : Causes dough to rise

6. Which organism is used as a biofertilizer?
Ⓐ *Azotobacter* Ⓑ *Plasmodium* Ⓒ *Entamoeba* Ⓓ *Salmonella*

Hint : Nitrogen fixing free-living bacteria

7. Which enzyme is used to remove protein stains?
Ⓐ Lipase Ⓑ Amylase Ⓒ Protease Ⓓ Cellulase

Hint : Acts on proteins

8. Which microbe produces streptomycin?
Ⓐ *Streptococcus* Ⓑ *Streptomyces* Ⓒ *Penicillium* Ⓓ *Bacillus*

Hint : Actinomycetes

9. Which is the primary sewage treatment?
Ⓐ Biological Ⓑ Chemical Ⓒ Physical Ⓓ Anaerobic

Hint : Removal of solids

10. Which microbe is used for the commercial production of citric acid?
Ⓐ *Lactobacillus* Ⓑ *Aspergillus niger* Ⓒ *Penicillium notatum* Ⓓ *Saccharomyces cerevisiae*

Hint : Fungus used in organic acid production

Assertion and Reason:

Directions: Read the following questions and choose any one of the following four responses.

- A: Assertion and Reason both are correct and Reason is the correct explanation of Assertion.
- B: Assertion and Reason both are correct and Reason is not the correct explanation of Assertion.
- C: Assertion is correct but Reason is wrong.
- D: Assertion is wrong but Reason is correct.

1. Assertion (A): *Lactobacillus* improves nutritional quality of curd.

Reason (R): It increases vitamin B₁₂ content.

- (A) A
- (B) B
- (C) C
- (D) D

Hint : Role of LAB

2. Assertion (A): Antibiotics are effective against viral diseases.

Reason (R): Viruses lack metabolic machinery.

- (A) A
- (B) B
- (C) C
- (D) D

Hint : Antibiotic specificity

3. Assertion (A): Methanogens are found in the rumen of cattle.

Reason (R): They help in cellulose digestion.

- (A) A
- (B) B
- (C) C
- (D) D

Hint : Mutualism

4. Assertion (A): Chemical fertilizers pollute soil and water.

Reason (R): Biofertilizers are eco-friendly alternatives.

- (A) A
- (B) B
- (C) C
- (D) D

Hint : Environmental impact

5. Assertion (A): Secondary sewage treatment is aerobic.

Reason (R): Anaerobic microbes dominate this stage.

- (A) A
- (B) B
- (C) C
- (D) D

Hint : Oxygen requirement

Very Short Answer Questions :

1. Name the microbe used in the production of penicillin.

Hint : Antibiotic from fungus

2. Which bacterium converts milk into curd?

3. Name the gas released during biogas production.

Hint : Major component of biogas

4. Which microbe is used for commercial production of citric acid?

Hint : Fungus

5. What is the full form of BOD?

Hint : Measure of organic pollution

Short Answer Questions :

1. What are antibiotics? Name any two antibiotics and their source microbes.

Hint : Secondary metabolites, bacterial/fungal origin

2. Explain the role of *Lactobacillus* in curd formation.

Hint : pH change, protein coagulation, nutritional value

3. Describe the process of sewage treatment up to secondary treatment.

Hint : Primary → secondary → microbes

4. What is biogas? Name the microbes involved and mention any two uses.

Hint : Methanogens, anaerobic digestion

5. How do microbes act as biofertilisers? Explain with one example.

Hint : Nitrogen fixation, soil fertility

6. Write any three benefits of using microbes in industrial products.

Hint : Cost-effective, eco-friendly, large-scale production

Long Answer Questions :

1. Describe sewage treatment in detail with the help of a flow diagram.

Hint : Primary treatment → secondary treatment → activated sludge

2. Explain the role of microbes in industrial production of beverages and organic acids.

Hint : Yeast, fermentation, examples

3. What are biofertilisers? Explain different types and their significance in agriculture.

Hint : Bacteria, cyanobacteria, mycorrhiza

4. Describe biogas production with the help of a labelled diagram of a biogas plant.

Hint : Slurry, anaerobic digestion, methane

5. Explain the role of microbes in human health and welfare.

Hint : Antibiotics, vaccines, enzymes, food products

Case Based Questions.

1. In many Indian households, curd is prepared by adding a small amount of curd to warm milk and keeping it undisturbed for a few hours. This process improves taste, digestibility, and nutritional value. The microbes involved also inhibit the growth of harmful bacteria in the gut.

Answer the following:

- Name the group of microbes responsible for curd formation.

Hint : They produce lactic acid.

- Write the scientific name of the bacterium commonly used.

Hint : It belongs to lactic acid bacteria.

- Mention one health benefit of consuming curd.

Hint : Related to digestion or gut health.

- Why is a small amount of curd added as a starter culture?

Hint : Think about inoculation.

2. Large-scale industrial fermentation is carried out using selected microorganisms under controlled conditions. One such product widely used in medicines, food preservation, and laboratories is produced by a fungus.

Answer the following:

- Name the industrial product produced by microbes in this case.

Hint : It is an organic acid.

(b) Name the microorganism involved in its production.

Hint : A fungus used in fermentation tanks.

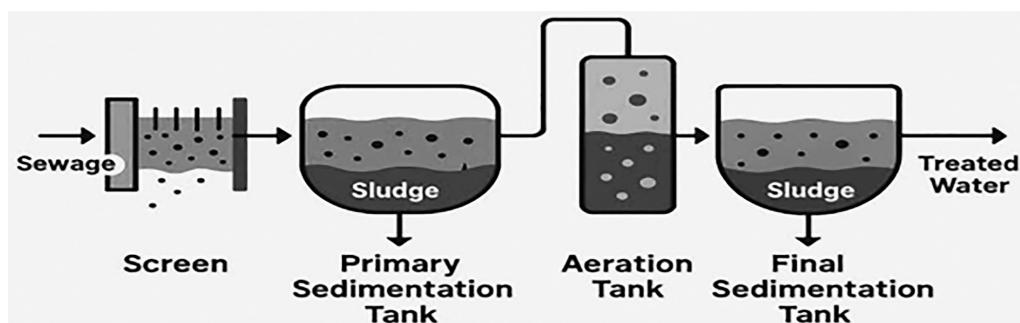
c) Mention **one use** of this product in daily life.

Hint : Food or pharmaceutical use.

(d) Why are fermentation conditions kept sterile?

Hint : Prevent contamination.

3. A schematic diagram showing **primary and secondary treatment of sewage** (sedimentation tank, aeration tank, activated sludge, effluent) is shown below:



(a) Identify the process occurring in the aeration tank.

Hint : Involves aerobic microbes.

(b) Name the microbial mass formed during secondary treatment.

Hint : It settles at the bottom.

(c) What happens to BOD during secondary treatment?

Hint : Increases or decreases?

(d) Mention one advantage of releasing treated effluent into water bodies.

Hint : Environmental safety.

ANSWER

MCQs

1. (A)	3. (C)	5. (B)	7. (C)	9. (C)
2. (B)	4. (B)	6. (A)	8. (B)	10. (B)

Assertion-Reason

1. (A)	2. (D)	3. (A)	4. (B)	5. (C)
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