

Microbes in Human Welfare — CBSE Pattern Test 2

Class 12 Biology · 90 minutes · 40 marks · Sections A–D with answer key · Narayan Gurukul Academy

Test 2 — CBSE Pattern (90 minutes, 40 marks)

Class 12 Biology · Microbes in Human Welfare · Narayan Gurukul Academy (ClassApna)

General Instructions: (1) This paper has four sections — Section A (1×10), Section B (2×4), Section C (3×4) and Section D (5×2) — total 40 marks. Time allowed: 90 minutes.
(2) All questions are compulsory. No overall choice is given; internal choice, where allowed, is clearly marked.
(3) For MCQ questions choose the single correct option; for VSA answers write a single line.
(4) Take $g = 10 \text{ m/s}^2$. All symbols carry their usual meaning. Use of a calculator is not permitted.

Section A — MCQ & VSA ($10 \times 1 = 10$ marks)

1. Penicillin was discovered from
 - (A) *Penicillium notatum*
 - (B) *Streptococcus*
 - (C) *Lactobacillus*
 - (D) Yeast
2. The biological stage of sewage treatment uses
 - (A) aerobic bacteria
 - (B) viruses
 - (C) fungi only
 - (D) algae
3. *Bacillus thuringiensis* controls
 - (A) insects
 - (B) weeds
 - (C) fungi
 - (D) viruses
4. *Azotobacter* is a
 - (A) free-living nitrogen fixer
 - (B) pathogen
 - (C) fungus
 - (D) virus
5. The holes in Swiss cheese are made by
 - (A) CO_2 from bacteria
 - (B) yeast
 - (C) mould
 - (D) virus
6. Biogas is produced by
 - (A) methanogens
 - (B) viruses
 - (C) algae
 - (D) protozoa
7. The fungal biocontrol agent is
 - (A) *Trichoderma*

- (B) Rhizobium
 - (C) Azotobacter
 - (D) Mycorrhiza
8. Lactic acid bacteria convert lactose into
- (A) lactic acid
 - (B) alcohol
 - (C) glucose
 - (D) protein
9. Name the microbe used for ethanol production.
10. What is BOD?

Section B — Short Answer I ($4 \times 2 = 8$ marks)

11. Which bacterium gives Swiss cheese its holes?
12. Name one organic acid produced by a microbe.
13. What is the main component of biogas?
14. What is mycorrhiza?

Section C — Short Answer II ($4 \times 3 = 12$ marks)

15. Describe the role of microbes in industrial production.
16. Explain the role of Rhizobium and mycorrhiza in agriculture.
17. Describe the production of biogas.
18. Explain the use of biocontrol agents.

Section D — Long Answers ($2 \times 5 = 10$ marks)

19. (a) Describe sewage treatment. (b) Describe the types of biofertilisers.
20. (a) Describe the production of fermented beverages. (b) Explain the use of microbes as biocontrol agents and biofertilisers.

Answer Key (Marking Scheme)

- Q1 — (A) *Penicillium notatum*. Q2 — (A) aerobic bacteria. Q3 — (A) insects. Q4 — (A) free-living nitrogen fixer. Q5 — (A) CO₂ from bacteria. Q6 — (A) methanogens. Q7 — (A) *Trichoderma*. Q8 — (A) lactic acid.
- Q9 — Yeast.
- Q10 — BOD is the amount of oxygen consumed by bacteria to oxidise organic matter.
- Q11 — *Propionibacterium sharmanii*.
- Q12 — Citric acid (from *Aspergillus niger*).
- Q13 — Methane.
- Q14 — Mycorrhiza is a symbiotic association of a fungus with plant roots.
- Q15 — Fermented beverages, antibiotics, organic acids and enzymes.
- Q16 — Rhizobium fixes nitrogen; mycorrhiza improves phosphorus uptake and drought resistance.
- Q17 — Methanogens digest sludge in a digester to produce methane-rich biogas.
- Q18 — Ladybird controls aphids; *Bacillus thuringiensis* controls caterpillars; eco-friendly.

Q19 — (a) Primary + secondary treatment. (b) Bacterial (Rhizobium, Azotobacter) and fungal (mycorrhiza).

Q20 — (a) Yeast ferments sugars to ethanol. (b) Biocontrol by natural enemies; biofertilisers enrich soil nutrients.