



Attempt questions first; check the separate key afterward. Show all working. Draw accurate figures where required.

A. Very short answers - 1 mark each

1. Name an instrument used to observe many microorganisms.
2. Explain why many microorganisms cannot be seen unaided.
3. Name four major groups of cellular microorganisms studied at this level.
4. Give one example of each group.
5. Which microorganism helps convert milk into curd?
6. Explain how temperature affects curd setting.
7. Which microorganism commonly makes bread dough rise?
8. Name the gas responsible for the rise.

B. Short answers / practice - 2 marks each

9. Do all microorganisms cause disease?
10. Describe three useful roles of microorganisms.
11. Name the association between legume roots and nitrogen-fixing bacteria.
12. Explain how this helps soil fertility.
13. Are viruses able to reproduce independently outside living cells?
14. Explain why viruses differ from cellular microorganisms.
15. Name one disease caused by a bacterium.
16. Name one caused by a virus.
17. Does refrigeration kill every microorganism in food?
18. Explain how low temperature generally slows food spoilage.

19. What is pasteurisation?

20. Distinguish pasteurisation from complete sterilisation.

C. Application / reasoning - 3 marks each

21. Can antibiotics treat every viral infection?

22. Explain why antibiotics should not be used indiscriminately.

23. Name the process that breaks down dead matter into simpler substances.

24. Explain microorganisms' role in nutrient recycling.

25. A yeast population doubles every hour from 100 cells under an ideal model. Find count after 3 h.

26. State one reason a real population may stop doubling.

27. Name a useful food made with microbial fermentation other than curd or bread.

28. Explain why damp bread usually develops mould faster than dry bread under otherwise similar conditions.

29. Can boiling make visibly spoiled food reliably safe to eat?

30. An ideal bacterial population doubles every 30 min from 50 cells. Find its size after 2 h.

31. Compare the roles of microorganisms in sewage treatment and food spoilage.

D. Extended practice - 5 marks per pair

32. Why are salt and sugar used in some food-preservation methods?

33. Compare drying, refrigeration and sealed storage for limiting spoilage.

34. A microscope has 10× eyepiece and 20× objective. Find magnification.

35. Plan a safe teacher-supervised observation of prepared slides, with labelled drawings and hygiene precautions.

ANSWER KEY - Numerical / closed questions

- 1) Microscope. 3) Bacteria, fungi, protozoa, microscopic algae. 5) Lactic acid bacteria such as Lactobacillus. 7) Yeast. 8) Carbon dioxide. 9) No. 11) Root-nodule association with Rhizobium. 13) No. 15) Example: tuberculosis or cholera. 16) Example: influenza or measles. 17) No. 21) No. 23) Decomposition. 25) 800. 27) Example: idli or dosa batter. 29) No; some toxins may remain. 30) 800 cells. 34) 200×.