CLASS 8 · SCIENCE

The Invisible Living World: Beyond Our Naked Eye

Sample paper · 15 questions · 22 marks

10 objective questions × 1 mark. Five written-response questions: 12 marks. Write your working where needed. Suggested time: 45 minutes. Answers and marking guidance follow the questions.

Original Evater practice material aligned with these school topics. Not an official NCERT paper or marking scheme. No automatic grading is implied.

Section A · Objective questions (10 marks)

1. In 1665, Robert Hooke described tiny compartments he saw through his microscope and published them in:

A. A farmer's almanac

B. The Origin of Species

C. A health diary

D. Micrographia

2. Who was the first person to observe living microorganisms with hand-made microscopes?

A. Robert Hooke

B. Thomas Edison

C. James Watt

D. Antonie van Leeuwenhoek

3. Which cell part is present in a plant cell but absent from an animal cell?

A. Cytoplasm

B. Cell wall

C. Cell membrane

D. Nucleus

4. A bacterium differs from a plant or animal cell because its genetic material lies in a region called the:

A. Nucleoid

B. Nucleus

C. Chloroplast

D. Cell wall

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5. A low-cost, foldable paper microscope that students can carry anywhere is called a:

A. Periscope

B. Telescope

C. Foldscope

D. Stethoscope

6. Which statement about viruses is correct?

A. They prepare their own food

B. They are acellular and multiply only inside the cells of a host

C. They are made of many cells

D. They are visible without any instrument

7. Idli batter left in a warm kitchen rises and turns slightly sour overnight. The main reason is:

A. Bacteria such as Lactobacillus, and yeast, ferment the batter

B. The rice grains grow

C. The bowl releases air

D. Warmth melts the salt

8. Pea and lentil plants often need less nitrogen fertiliser because their roots host:

A. Algae that make sugar

B. Viruses that kill weeds

C. Mushrooms that eat insects

D. Rhizobium bacteria that trap nitrogen from the air

9. Why does refrigerating cooked food slow down its spoilage?

A. Plastic boxes repel fungi

B. Low temperature slows the growth and activity of spoilage microorganisms

C. Cold adds vitamins

D. The fridge kills all microbes instantly

10. Which action best helps reduce antibiotic misuse?

A. Share unused tablets with a friend

B. Use antibiotics only when prescribed and follow the prescriber instructions

C. Change doses without advice

D. Take antibiotics for every cold

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Section B · Written responses (12 marks)

Attempt all five. Use a separate sheet if you need more space. The marks for each question are shown.

11. List four groups of the invisible living world introduced in this chapter, with one example or feature of each. [2 marks]

12. A researcher grows the same bread mould on two identical prepared samples. Both receive the same starting amount of mould and are kept at the same temperature, but one sample is kept much drier. Growth is slower on the dry sample. What factor was tested, and what can and cannot be concluded? [2 marks]

13. A food-storage poster says: food kept in a refrigerator is sterile forever. Identify two errors in that statement using what you know about microorganisms. [2 marks]

14. A root-nodule diagram shows Rhizobium receiving sugars from a legume and providing usable nitrogen compounds to it. Explain the benefit to each partner and name the atmospheric resource involved. [3 marks]

15. 'Microorganisms are friends as well as foes.' Support this statement with two helpful and two harmful roles of microorganisms. [3 marks]

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Answers & marking guidance

Use these after attempting the paper. Accept equivalent correct reasoning and sensible units. These are Evater model answers, not an official marking scheme.

Section A · 1 mark each

1. D — Hooke's book Micrographia presented his microscope observations, including the structures he called cells.

2. D — Leeuwenhoek, a Dutch scientist, built powerful simple microscopes and was the first to see the living microbial world.

3. B — Plant cells have an extra outer cell wall that provides rigidity and strength; animal cells do not.

4. A — Bacteria have no membrane-bound nucleus; their genetic material sits in the nucleoid region.

5. C — A foldscope is an affordable paper microscope used to observe microbes without a laboratory.

6. B — Viruses are acellular: they are not made of cells and can reproduce only inside a suitable host.

7. A — Fermentation by Lactobacillus and yeast produces gas and mild acid, making the batter rise and sour.

8. D — Microorganisms in the root nodules of legumes trap nitrogen from the air and improve soil fertility.

9. B — Microbes need suitable warmth to grow; refrigeration slows them, so food stays good longer.

10. B — Antibiotics should be used only when needed and exactly as prescribed. Inappropriate use can select for resistant bacteria.

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Section B · Model answers

11. Any four: bacteria (single-celled, some make curd or fix nitrogen), fungi (yeast ferments dough; mushrooms are macro fungi), protozoa (single-celled, some cause disease), microscopic algae (some are single-celled and make food), viruses (acellular, multiply only inside hosts).

Marking: Half mark per group with a correct example or feature, up to 2 marks.

12. The tested factor is moisture. The result supports the claim that this mould grows more slowly under the drier conditions tested. It does not prove that every microorganism needs air or the same moisture level, and it does not prove the dry sample contains no microbes. This is a described laboratory result, not an instruction to grow mould at home.

Marking: 1 mark for identifying moisture and the supported growth comparison; 1 mark for a sensible limit on the conclusion.

13. Refrigeration usually slows microbial growth but does not kill all microorganisms or sterilise food. Food can still spoil over time; cleanliness, suitable storage and safe use times remain important. A cold appearance or absence of smell is not proof that food is safe.

Marking: 1 mark for refrigeration not sterilising food; 1 mark for continued spoilage/safe-storage limitation.

14. The plant supplies sugars made by photosynthesis to the bacteria. Rhizobium fixes atmospheric nitrogen into forms the plant can use. Both partners benefit, which is a mutualistic relationship.

Marking: 1 mark for sugars supplied by the plant; 1 mark for usable nitrogen supplied by the bacteria; 1 mark for atmospheric nitrogen fixation or the correctly explained mutual benefit.

15. Helpful (any two): Lactobacillus makes curd; yeast makes bread and bhatura soft and fluffy; microbes decompose plant and animal waste into simple substances and clean up the environment; they help produce medicines. Harmful (any two): some cause communicable diseases such as typhoid or flu; some spoil food, making it smell or rot. Conclusion: invisible does not mean unimportant, so we use helpful microbes and guard against harmful ones.

Marking: 1 mark for two helpful roles; 1 for two harmful roles; 1 for a coherent use of both sides.

Topic references

NCERT Class 8 Science, Curiosity, Chapter 2: The Invisible Living World: Beyond Our Naked Eye.

https://ncert.nic.in/textbook/pdf/hecu102.pdf

Concept reference only. Questions and model answers are original Evater practice material, not an official NCERT paper.

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