The Invisible Living World: Beyond Our Naked Eye

Standard difficulty · 20 questions · 40 marks · Time: 36 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Robert Hooke first used the word "cell" after looking at:
(a) blood **(b)** pond water
(c) onion peel **(d)** thin slices of cork

2. The cell membrane:
(a) lets materials in and waste out **(b)** stores water and materials
(c) makes food using sunlight **(d)** gives the cell rigidity

3. Which microorganism is used for setting milk into curd?
(a) Spirulina **(b)** Amoeba **(c)** yeast **(d)** Lactobacillus

4. Which of these is UNICELLULAR?
(a) a human **(b)** bread mould **(c)** yeast **(d)** an earthworm

5. Which part is found in a plant cell but NOT in an animal cell?
(a) mitochondria **(b)** cytoplasm
(c) cell membrane **(d)** a large vacuole

6. A 2 mm insect leg is seen through a lens that magnifies 20 times. How long does it look?
(a) 20 mm **(b)** 40 mm **(c)** 22 mm **(d)** 400 mm

7. A bacterium splits into two every 20 minutes. Starting from one, how many are there after 240 minutes?
(a) 2,048 bacteria **(b)** 24 bacteria **(c)** 144 bacteria **(d)** 4,096 bacteria

8. Kitchen waste took 3 weeks and 3 days to become manure in a compost pit. How many days is that?
(a) 31 days **(b)** 13 days **(c)** 24 days **(d)** 18 days

Section B — Short answer — 8 × 2 = 16 marks

9. What is a cell?

10. Name (a) the part that makes food using sunlight (b) the part that stores water and materials

11. Which microorganism is used for (a) making biogas from dung (b) making dough rise?

12. Write "unicellular" or "multicellular": (a) a human (b) yeast

13. Is each found in "plant only" cells or "both" plant and animal cells? (a) nucleus (b) plastids

14. A recipe uses 5 g of yeast for every 100 g of flour. How much yeast is needed for 500 g of flour?

15. A microscope magnifies 100 times. How large does a 5 micrometre bacterium appear, in micrometres?

16. Curd set in 10 hours in summer and took 14 hours in winter. How much longer in winter? Why?

Section C — Word problems — 4 × 4 = 16 marks

17. Describe how to prepare an onion peel slide and what you see.

18. Write the job of nucleus, chloroplast, vacuole, and say which of them are found only in plant cells.

19. A single bacterium splits into two every 30 minutes. (a) How many are there after 240 minutes? (b) Why does food spoil faster in a warm kitchen? (c) How do salt and sugar keep pickles and murabbas from spoiling?

20. Explain how microorganisms help in (a) setting milk into curd and (b) making biogas from dung.

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Answer key

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Q	Answer	Working
1	**(d) thin slices of cork**	—
2	**(a) lets materials in and waste out**	—
3	**(d) Lactobacillus**	—
4	**(c) yeast**	—
5	**(d) a large vacuole**	—
6	**(b) 40 mm**	2 × 20 = 40
7	**(d) 4,096 bacteria**	it doubles 12 times: 4096
8	**(c) 24 days**	3 × 7 + 3 = 24
9	**The basic unit of life; all living things are made of cells.**	—
10	**(a) chloroplast (b) vacuole**	—
11	**(a) bacteria (b) yeast**	—
12	**(a) multicellular (b) unicellular**	—
13	**(a) both (b) plant only**	—
14	**25 g**	5 × 5
15	**500 micrometres**	5 × 100
16	**4 hours; the bacteria grow more slowly in the cold**	14 − 10
17	**Peel a thin layer from an onion, place it in water on a slide, add a drop of safranin for about 30 seconds, wash, add glycerin and lower a coverslip with a needle. Under the microscope, nearly rectangular cells with a wall and a nucleus are seen.**	—
18	**nucleus: controls the cell's activities and growth; chloroplast: makes food using sunlight; vacuole: stores water and materials. Plant only: chloroplast (the vacuole is large in plant cells, small or absent in animal cells).**	—
19	**(a) 256 (b) Microbes grow and multiply faster in warmth and moisture. (c) They draw water out and stop microbes from growing.**	doubles 8 times
20	**(a) Lactobacillus (b) bacteria**	—