

**Notes for valuers**

- Accept answers in the student's own words if the scientific idea is correct.
- Diagrams: give marks for neatness and correct labels; a diagram without labels gets half marks.
- Section D: only one of (A) or (B) is to be valued.

**SECTION – A**

**10 × 1 = 10**

1. B) microorganisms
2. B) microscope
3. C) nucleus
4. A) chloroplasts
5. B) Rhizobium
6. A) common cold
7. B) fermentation
8. B) tuberculosis
9. C) decomposers
10. A) air

**SECTION – B**

**3 × 2 = 6**

11. Microorganisms that cause disease are called pathogens. Examples (any two): Plasmodium (malaria), Salmonella typhi (typhoid), Mycobacterium (tuberculosis), influenza or common-cold virus.
12. The low temperature in a refrigerator slows down the growth and activity of microorganisms, so food does not spoil quickly.
13. Any two: plant cells have a cell wall – animal cells do not; plant cells have chloroplasts – animal cells do not; plant cells have a large central vacuole – animal cells have small or no vacuoles.

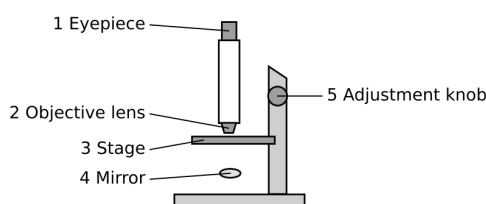
**SECTION – C**

**2 × 4 = 8**

14. 1 – eyepiece, 2 – objective lens, 3 – stage, 4 – mirror, 5 – adjustment (focusing) knob.

[½ × 5 + 1½]

Functions (any two): eyepiece and objective lens magnify the object; stage holds the slide; mirror reflects light onto the slide; adjustment knob brings the object into focus.



15. Any four: through air – droplets from coughing and sneezing (common cold, tuberculosis); through contaminated water – cholera, typhoid; through contaminated food – diarrhoea, food poisoning; through direct contact – chickenpox, ringworm; through insects (vectors) – mosquitoes spread malaria and dengue.

[1 each]

## SECTION – D

2 × 8 = 16

**16. A) Humans:** tuberculosis, typhoid, cholera (bacteria); malaria (protozoan); common cold, chickenpox (viruses). [4 + 4]

**Animals:** anthrax (bacteria) in cattle; foot-and-mouth disease (virus).

**Plants:** citrus canker (bacteria), rust of wheat (fungus), yellow vein mosaic of bhindi (virus).

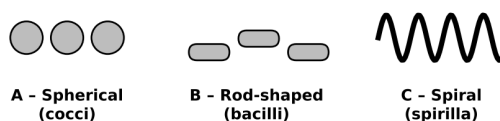
**Food spoilage:** bacteria and fungi grow on food, making it smell bad and become harmful (food poisoning).

**Preservation (any four):** refrigeration; salting; adding sugar (jams); oil and vinegar (pickles); boiling and pasteurisation of milk; drying; airtight packing.

**16. B) Five groups of microorganisms:** [8]

| Group    | Examples                        | Useful / harmful effect                                    |
|----------|---------------------------------|------------------------------------------------------------|
| Bacteria | Lactobacillus, Rhizobium        | Curd formation; nitrogen fixation (some cause typhoid, TB) |
| Fungi    | Yeast, Penicillium, bread mould | Bread making, penicillin (some spoil food)                 |
| Algae    | Chlamydomonas, Spirogyra        | Make their own food and give oxygen                        |
| Protozoa | Amoeba, Plasmodium              | Plasmodium causes malaria                                  |
| Viruses  | Influenza virus, polio virus    | Cause common cold, polio, chickenpox                       |

Shapes of bacteria (for reference):



**17. A) A vaccine** contains dead or weakened microbes (or parts of them) of a disease. [2 + 4 + 2]

When it enters the body, the body makes antibodies and 'remembers' the germ. If the real germ attacks later, the body destroys it quickly, so we do not fall ill. Edward Jenner made the first vaccine, against smallpox.

Vaccination of many people also stops the spread of the disease in the community.

**Diseases (any four):** polio, measles, tuberculosis (BCG), diphtheria, whooping cough, tetanus, hepatitis B, rubella.

**17. B) Value points:** health is more valuable than money; balanced diet with cereals, pulses, fruits, vegetables and milk; regular exercise and outdoor play; enough sleep; personal hygiene – bathing, washing hands, cutting nails, brushing teeth; clean surroundings – no stagnant water, proper waste disposal; mental health – sharing feelings, hobbies, less screen time; regular check-ups and vaccination; conclusion. [8]

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