

Health, Natural Resources and Food Production

Science · Class 9 · Topic-wise Practice Worksheet

TIME 45 minutes	QUESTIONS 18	TOTAL MARKS 24	MAX. SCORE ___ / 24
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Name: _____ Class/Sec: _____ Date: _____

INSTRUCTIONS

- There are **18 questions** in this worksheet. All questions are compulsory.
- Each question has four options (A), (B), (C) and (D). Exactly **one** option is correct.
- Questions 1–15 carry **1 mark** each. Questions 16–18 (Achievers Section) carry **3 marks** each.
- There is no negative marking. Study every diagram and table carefully.

Section A — Scientific Reasoning

Q1–Q8 · 1 mark each

- Malaria is caused by *Plasmodium*, which is spread by the _____.
 (A) Housefly (B) Male *Anopheles* mosquito
 (C) Female *Anopheles* mosquito (D) *Aedes* mosquito
- Antibiotics are **not** effective against _____.
 (A) Bacteria (B) Fungi
 (C) Protozoa (D) Viruses
- Vaccination protects a person from a disease by _____.
 (A) Killing all the microbes in the body (B) Training the immune system to recognise the pathogen
 (C) Supplying antibiotics in advance (D) Improving the person's diet
- Atmospheric nitrogen is converted into a form usable by plants mainly by _____.
 (A) Fungi on dead leaves (B) Earthworms in the soil
 (C) *Rhizobium* bacteria in the root nodules of legumes (D) Green algae in ponds
- The ozone layer in the upper atmosphere is important because it _____.
 (A) Supplies oxygen for breathing (B) Produces rainfall
 (C) Traps heat and warms the earth (D) Absorbs harmful ultraviolet radiation from the sun
- Which of the following is a greenhouse gas?
 (A) Carbon dioxide (B) Oxygen
 (C) Nitrogen (D) Argon
- Compared with a chemical fertiliser, manure has the advantage that it _____.
 (A) Supplies nutrients in a very concentrated form (B) Adds organic matter and improves soil texture
 (C) Acts instantly on the crop (D) Contains only nitrogen
- Which of the following is a **communicable** disease?
 (A) Diabetes (B) Cancer
 (C) Tuberculosis (D) High blood pressure

9. One row of the table below is **incorrectly** matched. Which row is it?

Row	Disease	Caused by
(A)	Typhoid	Bacterium
(B)	Dengue	Bacterium
(C)	Kala-azar	Protozoan
(D)	Ringworm	Fungus

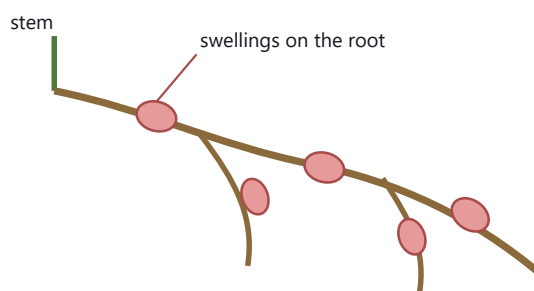
Table 6.1 — Diseases and their causative agents

- (A) (A) (B) (B)
(C) (C) (D) (D)

10. A farmer grows wheat one season and gram (a pulse) the next, in the same field. The main benefit of this practice is that _____.

- (A) The field needs no sunlight (B) The soil dries out faster
(C) Weeds are completely destroyed (D) The soil is enriched with nitrogen

11. The swellings on the root of the pea plant shown below contain _____.



Root of a pea plant showing swellings

- (A) Nitrogen-fixing bacteria (B) Stored starch
(C) Water absorbed from the soil (D) Insect eggs

12. Growing two or more crops together in the same field in a definite row pattern is called _____.

- (A) Crop rotation (B) Intercropping
(C) Mixed cropping (D) Monoculture

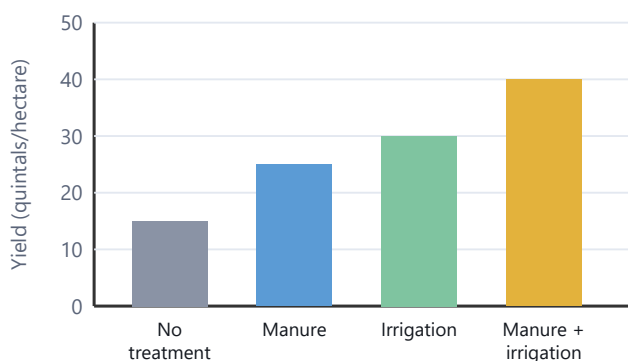
13. To control the spread of dengue in a locality, the most effective measure is to _____.

- (A) Give antibiotics to everyone (B) Boil all drinking water
(C) Remove sources of stagnant water where mosquitoes breed (D) Keep patients away from sunlight

14. The practice of keeping bees for the commercial production of honey is called _____.

- (A) Pisciculture (B) Horticulture
(C) Sericulture (D) Apiculture

15. The bar graph shows the yield of a wheat field under four different practices. Which practice gave the greatest improvement over the untreated field?



Wheat yield under four different farming practices

- (A) Manure together with irrigation
(B) Irrigation alone
(C) Manure alone
(D) No treatment

Achievers Section

Q16–Q18 · 3 marks each

16. **Assertion (A):** A doctor refuses to prescribe antibiotics to a patient suffering from a common cold.
Reason (R): The common cold is caused by a virus, and antibiotics act only on bacteria.
- (A) Both A and R are true and R is the correct explanation of A
(B) Both A and R are true but R is not the correct explanation of A
(C) A is true but R is false
(D) A is false but R is true
17. A pond near a factory turns green with algae, and later the fish in it die. The most likely sequence of events is that ____.
- (A) The algae ate the fish directly
(B) Fertiliser run-off caused algae to grow, and their decay used up the dissolved oxygen
(C) The algae released carbon dioxide that poisoned the fish
(D) The water became too cold for the fish
18. Consider the three statements below.
- (i) Ground water is a renewable resource that can still be exhausted if drawn faster than it is recharged.
(ii) Burning fossil fuels adds carbon dioxide and oxides of sulphur and nitrogen to the air.
(iii) Storage losses of grain are caused only by insects, not by moisture.
- Which of them are **true**?
- (A) (i) and (ii) only
(B) (ii) and (iii) only
(C) (i) and (iii) only
(D) All three

Answer Key

1	C	2	D	3	B	4	C	5	D
6	A	7	B	8	C	9	B	10	D
11	A	12	B	13	C	14	D	15	A
16	A	17	B	18	A				

Solutions

1. Answer: (C) Female *Anopheles* mosquito

Only the **female *Anopheles*** feeds on blood, which she needs for her eggs, and so she carries the *Plasmodium* parasite from one person to another. *Aedes* spreads dengue and chikungunya instead.

2. Answer: (D) Viruses

Antibiotics work by blocking processes such as cell-wall building that belong to living cells. **Viruses** have no such machinery of their own — they use the host cell's — so antibiotics cannot touch them, which is why they do not cure a common cold.

3. Answer: (B) Training the immune system to recognise the pathogen

A vaccine introduces a weakened or killed pathogen, or part of one, so the immune system makes antibodies and memory cells against it. If the real pathogen arrives later, the body responds at once — so vaccination works by **training the immune system**.

4. Answer: (C) *Rhizobium* bacteria in the root nodules of legumes

Rhizobium lives in the root nodules of pulses and other legumes and fixes atmospheric nitrogen into compounds the plant can absorb. This is why growing a legume crop enriches the soil with nitrogen.

5. Answer: (D) Absorbs harmful ultraviolet radiation from the sun

Ozone **absorbs most of the sun's ultraviolet radiation**, which would otherwise cause skin cancer, cataracts and damage to crops. Its depletion by CFCs is the reason those chemicals have been phased out.

6. Answer: (A) Carbon dioxide

Carbon dioxide lets sunlight in but traps the heat radiated back from the earth's surface, warming the atmosphere. Methane and water vapour behave the same way, while nitrogen, oxygen and argon do not.

7. Answer: (B) Adds organic matter and improves soil texture

Manure is bulky and low in nutrients, but it **adds humus to the soil**, improving its texture, its water-holding capacity and the life of the microbes in it. Fertilisers give a quicker, more concentrated supply but do nothing for soil structure.

8. Answer: (C) Tuberculosis

Tuberculosis is caused by a bacterium that spreads from person to person through droplets in the air, so it is communicable (infectious). The other three are non-communicable diseases, arising from the body's own functioning and lifestyle.

9. Answer: (B) (B)

Dengue is caused by a *virus* carried by the *Aedes* mosquito, not by a bacterium, so row **(B)** is wrong. Typhoid really is bacterial, kala-azar is caused by the protozoan *Leishmania*, and ringworm by a fungus.

10. Answer: (D) The soil is enriched with nitrogen

Gram is a legume, so its root nodules carry *Rhizobium*, which fixes atmospheric nitrogen. Alternating it with a nitrogen-hungry cereal like wheat **restores the soil's nitrogen** and reduces the need for fertiliser. This practice is crop rotation.

11. Answer: (A) Nitrogen-fixing bacteria

The swellings are root nodules, and they house ***Rhizobium* bacteria that fix atmospheric nitrogen** for the plant. In return the plant supplies the bacteria with food — a partnership found in all legumes.

12. Answer: (B) Intercropping

Intercropping plants the crops in a set pattern of rows, which makes sowing, spraying and harvesting each crop possible. In mixed cropping the seeds are simply sown together with no pattern, and crop rotation grows the crops one after another in different seasons.

13. Answer: (C) Remove sources of stagnant water where mosquitoes breed

Dengue spreads through the *Aedes* mosquito, which breeds in clean, stagnant water in coolers, tyres and pots.

Removing that standing water breaks the vector's life cycle. Antibiotics do not act on viruses, and dengue is not waterborne, so boiling drinking water does not help.

14. Answer: (D) Apiculture

Apiculture is bee-keeping, which yields honey and wax. Pisciculture is fish farming, sericulture is silkworm rearing and horticulture is the growing of fruit, vegetables and ornamental plants.

15. Answer: (A) Manure together with irrigation

Reading the bars against the scale: no treatment 15, manure 25, irrigation 30 and manure with irrigation 40 quintals per hectare. The largest gain over the untreated field is $40 - 15 = 25$, from **manure together with irrigation** — the two measures address different limits on growth, so their benefits add up.

16. Answer: (A) Both A and R are true and R is the correct explanation of A

Antibiotics attack processes peculiar to bacteria, such as cell-wall synthesis, and viruses have none of these. Taking them for a viral cold does no good and encourages resistant bacteria to develop. Both statements are true and the second is precisely **why** the doctor refuses, so R explains A.

17. Answer: (B) Fertiliser run-off caused algae to grow, and their decay used up the dissolved oxygen

Nutrients washed in from fertiliser make algae multiply rapidly. When the algal bloom dies, decomposer bacteria break it down and **consume the dissolved oxygen**, leaving too little for the fish to breathe. This chain of events is called eutrophication.

18. Answer: (A) (i) and (ii) only

Statement (i) is true: aquifers refill from rainfall, but over-extraction lowers the water table faster than recharge. Statement (ii) is true, and those oxides are what cause acid rain. Statement (iii) is false — moisture, along with rodents, fungi and bacteria, is a major cause of storage loss, which is why grain is dried before storage. So only **(i) and (ii)** hold.