

Teacher's Handbook

BIOLOGY Class-VII

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EXERCISE -1

I. Choose the correct answer:

1. What is the major cause of air pollution?
2. Which gas contributes to the greenhouse effect?
3. What is a primary source of water pollution?
4. Which disease is caused by polluted water?
5. What is the main pollutant in acid rain?
6. Which is a natural source of air pollution?
7. Which practice reduces water pollution?
8. What is eutrophication?
9. Which gas is a major component of smog?
10. What causes global warming?
11. Which gas is associated with photochemical smog?
12. What is the main component of clean air?
13. Which metal is commonly found in polluted water?
14. What is the pH of acid rain?
15. What does sewage treatment remove?
16. Which gas causes respiratory problems?
17. Which activity contributes to deforestation?
18. What does the ozone layer protect us from?
19. What is the best method to control air pollution?
20. Which is an effect of water pollution?
21. Which greenhouse gas is emitted by rice paddies?
22. What is the main source of noise pollution?
23. Which is a renewable energy source?
24. What is a benefit of afforestation?
25. Which pollutants are non-biodegradable?
26. What is the major cause of land pollution?
27. Which process cleans polluted air?
28. Which gas is used in fire extinguishers?
29. What causes algal blooms in water?
30. Which energy source emits no greenhouse gases?
31. What is the main cause of marine pollution?
32. What reduces indoor air pollution?
33. Which gas causes acid rain?
34. What increases soil erosion?
35. What is a health effect of air pollution?
36. Which human activity emits the most carbon dioxide?
37. What is a method to reduce water pollution?
38. What is the main effect of noise pollution?

- Ans:** a) Factories
Ans: b) Carbon dioxide
Ans: a) Industries
Ans: b) Cholera
Ans: a) Sulfur dioxide
Ans: a) Volcanoes
Ans: b) Recycling water
Ans: b) Oxygen depletion
Ans: b) Ozone
Ans: a) Greenhouse gases
Ans: a) Ozone
Ans: b) Nitrogen
Ans: a) Lead
Ans: a) 3-5
Ans: a) Waste
Ans: a) Sulfur dioxide
Ans: a) Farming
Ans: a) UV radiation
Ans: a) Using filters
Ans: a) Biodiversity
Ans: a) Methane
Ans: a) Industries
Ans: b) Wind
Ans: a) Reduced pollution
Ans: a) Plastic
Ans: a) Mining
Ans: a) Photosynthesis
Ans: a) Carbon dioxide
Ans: a) Nutrient runoff
Ans: a) Solar
Ans: a) Oil spills
Ans: a) Ventilation
Ans: a) Nitrogen dioxide
Ans: a) Overgrazing
Ans: a) Asthma
Ans: a) Burning fossil fuels
Ans: a) Sewage treatment
Ans: a) Hearing loss

II. Say True or False

- | | |
|--|-------------------|
| 1. Air pollution can cause lung diseases. | Ans: True |
| 2. Deforestation reduces CO ₂ in the air. | Ans: False |
| 3. Plastic pollution affects marine life. | Ans: True |
| 4. Ozone layer blocks harmful UV rays. | Ans: True |
| 5. Factories cause water pollution. | Ans: True |
| 6. Burning coal produces clean energy. | Ans: False |
| 7. Acid rain damages forests and soil. | Ans: True |
| 8. Noise pollution causes hearing loss. | Ans: True |
| 9. Oil spills harm ocean ecosystems. | Ans: True |
| 10. CO ₂ is the main greenhouse gas. | Ans: True |
| 11. Smog improves air quality. | Ans: False |
| 12. Cholera is a water-borne disease. | Ans: True |
| 13. Fertilizers cause eutrophication. | Ans: True |
| 14. Ozone depletion causes skin cancer. | Ans: True |
| 15. Deforestation increases soil erosion. | Ans: True |
| 16. Thermal pollution warms rivers. | Ans: True |
| 17. Factories emit harmful gases. | Ans: True |
| 18. Plastic degrades in a few years. | Ans: False |
| 19. UV radiation is blocked by smog. | Ans: False |
| 20. Air pollution reduces visibility. | Ans: True |
| 21. Methane is a greenhouse gas. | Ans: True |
| 22. Acid rain is caused by CO ₂ only. | Ans: False |

III. Match the following:

Set 1:

- | | |
|-------------------|----------------|
| 1. Acid rain | → d) Buildings |
| 2. Smog | → c) Lungs |
| 3. Eutrophication | → a) Algae |
| 4. Ozone hole | → e) UV |
| 5. Oil spill | → b) Fish |

Set 2:

- | | |
|--------------------|------------------|
| 1. Methane | → c) Cows |
| 2. CO ₂ | → e) Vehicles |
| 3. SO ₂ | → b) Factories |
| 4. Plastic | → a) Oceans |
| 5. Nitrates | → d) Fertilizers |

Set 3:

1. Ozone layer → d) UV protection
2. Global warming → e) Ice melting
3. Noise pollution → a) Stress
4. Thermal pollution → b) Warm water
5. Recycling → c) Waste reduction

IV. Multi-Correct Answer Type Questions

1. Which gases cause acid rain? **Ans:** a) SO₂, b) NO_x
2. Which are water pollutants? **Ans:** a) Pesticides, c) Oil
3. What increases the greenhouse effect? **Ans:** a) CO₂, b) CH₄
4. Which are renewable resources? **Ans:** a) Sunlight, b) Wind
5. What causes waterborne diseases? **Ans:** b) Viruses, c) Bacteria
6. Which are primary air pollutants? **Ans:** b) NO₂, c) CO
7. Which are biodegradable wastes? **Ans:** a) Paper, c) Food waste
8. Which gases cause smog? **Ans:** a) O₃, b) NO_x
9. Which contribute to global warming? **Ans:** a) CH₄, b) H₂O vapor
10. What are sources of noise pollution? **Ans:** a) Vehicles, c) Machines
11. What decreases air quality? **Ans:** a) Dust, b) Smoke
12. Which industries pollute water? **Ans:** a) Textile, c) Oil refining

V. Reasoning Type Questions:

1. **Assertion (A):** Air pollution harms human health.
Reason (R): Pollutants like CO and SO₂ cause respiratory issues.
Ans: (a) Both correct, R explains A.
2. **Assertion (A):** Water pollution reduces aquatic life.
Reason (R): Dumping industrial waste decreases oxygen levels.
Ans: (a) Both correct, R explains A.
3. **Assertion (A):** Deforestation increases CO₂ in the air.
Reason (R): Trees absorb CO₂ and release oxygen.
Ans: (a) Both correct, R explains A.
4. **Assertion (A):** Burning fossil fuels causes acid rain.
Reason (R): Fossil fuels release sulfur and nitrogen oxides.
Ans: (a) Both correct, R explains A.
5. **Assertion (A):** Contaminated water spreads diseases.
Reason (R): It contains pathogens harmful to health.
Ans: (a) Both correct, R explains A.
6. **Assertion (A):** Noise pollution affects mental health.
Reason (R): Continuous noise leads to stress and anxiety.

Ans: (a) Both correct, R explains A.

7. **Assertion (A):** Plastic waste pollutes water bodies.

Reason (R): Plastics are non-biodegradable pollutants.

Ans: (a) Both correct, R explains A.

8. **Assertion (A):** Smog reduces visibility in cities.

Reason (R): It forms due to pollution in the atmosphere.

Ans: (a) Both correct, R explains A.

9. **Assertion (A):** Factories cause water pollution.

Reason (R): They release harmful chemicals into rivers.

Ans: (a) Both correct, R explains A.

10. **Assertion (A):** Carbon monoxide is dangerous to humans.

Reason (R): It binds with hemoglobin, reducing oxygen.

Ans: (a) Both correct, R explains A.

11. **Assertion (A):** Ozone layer depletion increases UV radiation.

Reason (R): CFCs destroy ozone molecules in the atmosphere.

Ans: (a) Both correct, R explains A.

12. **Assertion (A):** Greenhouse gases trap heat in the atmosphere.

Reason (R): They absorb and emit infrared radiation.

Ans: (a) Both correct, R explains A.

VI. Choose the Odd Man Out:

1. **Ans:** c) Oxygen

Explanation: Oxygen is a natural, life-sustaining gas, while the others are harmful air pollutants.

2. **Ans:** d) Sunlight

Explanation: Sunlight is natural and beneficial, while the others are forms of water pollution.

3. **Ans:** d) Deforestation

Explanation: The first three are water purification methods, while deforestation is unrelated to water treatment.

4. **Ans:** c) Oxygen

Explanation: Oxygen is essential for life, while the others are greenhouse gases contributing to global warming.

5. **Ans:** d) Photosynthesis

Explanation: Photosynthesis removes CO₂ from air, while the others release pollutants / greenhouse gases.

6. **Ans:** c) Malaria

Explanation: Malaria is spread by mosquitoes, while the others are waterborne diseases.

7. **Ans:** a) Planting trees

Explanation: Planting trees helps the environment, while the others harm it.

8. **Ans:** d) Natural gas

Explanation: Natural gas is a fossil fuel, while the others are renewable energy sources.

9. **Ans:** c) Noise

Explanation: Noise is a form of pollution that affects hearing, while the others contaminate water.

10. **Ans:** d) Rainfall

Explanation: Rainfall is a natural weather phenomenon, while the others are sources of air pollution.

VII. Answer the following questions:

1. Write any four natural sources of air pollution.

Ans: Natural sources of air pollution are:

- Volcanic eruptions (release ash, SO₂)
- Forest fires (produce smoke and CO₂)
- Dust storms (carry particulate matter)
- Pollen from plants (causes allergies)

Explanation: These occur without human intervention and contribute to atmospheric pollution.

2. Write the major air pollutants.

Ans: The major air pollutants are:

- Carbon monoxide (CO)
- Sulfur dioxide (SO₂)
- Nitrogen oxides (NO_x)
- Particulate matter (PM_{2.5}/PM₁₀)
- Ground-level ozone (O₃)

Explanation: These pollutants are regulated worldwide due to their health and environmental impacts.

3. What is the effect of chlorofluorocarbons (CFCs) in the air?

Ans: **Chlorofluorocarbons (CFCs) released into the air damage the ozone layer.** This leads to the formation of holes in the ozone layer, allowing harmful ultraviolet (UV) rays to reach the Earth, which can cause skin cancer and other problems.

4. Write the steps to be taken to reduce air pollution.

Ans: To reduce air pollution

- Use public transport/electric vehicles to reduce vehicular emissions.
- Plant trees to absorb CO₂ and release oxygen.
- Install scrubbers in factories to filter harmful gases.
- Promote renewable energy (solar, wind) instead of fossil fuels.
- Ban open burning of waste and agricultural residues.

Pro Tip: The "3 R's" (Reduce, Reuse, Recycle) also help minimize pollution.

5. What are the major water pollutants?

Ans: The major water pollutants:

- **Chemical:** Industrial waste, pesticides, heavy metals (lead, mercury).
- **Biological:** Sewage, pathogens (bacteria, viruses).
- **Physical:** Plastic waste, oil spills, thermal pollution (hot water from industries).

Example: The Ganges River is polluted with industrial effluents and religious offerings.

6. Write any three characteristics of potable water.

Ans: Three characteristics of potable water:

- **Clear and odorless:** No visible particles or unpleasant smell.
- **Free from pathogens:** No disease-causing microorganisms.
- **Balanced pH (6.5–8.5):** Neither too acidic nor alkaline.

Bonus: Potable water should also lack harmful chemicals like arsenic or fluoride.

7. What are the ways to purify water?

Ans: The ways to purify water:

- **Boiling:** Kills bacteria and viruses (e.g., for drinking water).
- **Filtration:** Removes impurities using sand or activated carbon filters.
- **Chlorination:** Adds chlorine to disinfect water (used in municipal supplies).
- **Reverse osmosis (RO):** Removes dissolved salts and heavy metals.
- **UV treatment:** Uses ultraviolet light to destroy pathogens.

EXERCISE - 2

I. Choose the Correct Answer:

1. Pollination occurs when pollen lands on which part of the flower? **Ans:** c) Stigma
2. Which plant reproduces by spores? **Ans:** b) Fern
3. Which process leads to seed formation in plants? **Ans:** a) Fertilization
4. What is the name of the male reproductive part of a flower? **Ans:** a) Stamen
5. The transfer of pollen from the anther to the stigma is called: **Ans:** b) Pollination
6. What is the female reproductive part of a flower called? **Ans:** b) Pistil
7. The part of a seed that stores food is known as: **Ans:** b) Cotyledon
8. A flower containing both reproductive organs is called: **Ans:** c) Bisexual
9. An example of a unisexual flower is: **Ans:** c) Papaya
10. Flowers pollinated by the wind are generally: **Ans:** b) Small
11. Seeds dispersed by animals are typically: **Ans:** b) Animals
12. Which plant reproduces through vegetative propagation? **Ans:** a) Potato
13. Which conditions are required for seed germination? **Ans:** b) Germination
14. A fruit develops from which part of the flower? **Ans:** a) Ovary
15. Pollination between flowers of different plants is called: **Ans:** a) Cross-pollination
16. Pollen grains are produced in the: **Ans:** c) Anther
17. Which plant disperses its seeds by explosion? **Ans:** b) Pea
18. A seedling develops from which part of a plant? **Ans:** b) Seed
19. Which part of a plant is responsible for photosynthesis? **Ans:** b) Leaf
20. The structure where seeds attach in a pod is the: **Ans:** a) Placenta
21. The bright part of a flower that attracts insects is the: **Ans:** a) Petal
22. What structure protects the bud of a flower? **Ans:** a) Sepal
23. Which flower blooms only at night? **Ans:** c) Cactus
24. Pollen grains are transferred by which medium in wind-pollinated plants? **Ans:** b) Wind
25. The part of a seedling that grows into the root is the: **Ans:** a) Radicle
26. What encloses and protects the seed? **Ans:** b) Seed coat
27. An example of a fruit without seeds is: **Ans:** a) Banana
28. Which plant reproduces using spores? **Ans:** a) Moss
29. A complete flower includes: **Ans:** c) All parts
30. Which plant has an underground stem? **Ans:** b) Ginger
31. Which plant reproduces using bulbs? **Ans:** b) Onion
32. The ovule of a flower develops into a: **Ans:** b) Seed
33. Self-pollination occurs within: **Ans:** a) The same flower
34. The stigma is part of which structure? **Ans:** b) Pistil
35. Seeds dispersed by water are usually: **Ans:** b) Floating
36. The fusion of gametes forms a: **Ans:** b) Zygote

II. Say True or False:

- | | |
|---|-------------------|
| 1. Pollination transfers pollen to the stigma. | Ans: True |
| 2. Ovary contains ovules in flowering plants. | Ans: True |
| 3. Seeds develop from ovules in a flower. | Ans: True |
| 4. Flowers are essential for vegetative growth. | Ans: False |
| 5. Flowers are involved in asexual reproduction. | Ans: False |
| 6. Fertilization forms seeds in plants. | Ans: True |
| 7. Stem cuttings are used in plant propagation. | Ans: True |
| 8. Pollination can occur via wind and insects. | Ans: True |
| 9. Fruits form from the ovary of a flower. | Ans: True |
| 10. Fertilized ovules develop into seeds. | Ans: True |
| 11. All plants reproduce sexually and asexually. | Ans: False |
| 12. Pollen is produced in the stigma of flowers. | Ans: False |
| 13. Seed dispersal helps reduce competition. | Ans: True |
| 14. Asexual reproduction uses seeds for growth. | Ans: False |
| 15. Budding is a type of asexual reproduction. | Ans: True |
| 16. Stamen is the male part of a flower. | Ans: True |
| 17. Water is not required for seed germination. | Ans: False |
| 18. Fertilization happens before pollination. | Ans: False |
| 19. Grafting is a method of vegetative propagation. | Ans: True |
| 20. Sexual reproduction involves gametes fusion. | Ans: True |

III. Match the Following:

Set 1:

- | | |
|----------------|---------------|
| 1. Pollination | → c) Transfer |
| 2. Stamen | → e) Pollen |
| 3. Pistil | → b) Ovary |
| 4. Ovule | → a) Seed |
| 5. Dispersal | → d) Spread |

Set 2:

- | | |
|------------------|--------------|
| 1. Grafting | → b) Asexual |
| 2. Ovary | → e) Fruit |
| 3. Fertilization | → d) Gametes |
| 4. Rhizome | → a) Stem |
| 5. Germination | → c) Growth |

Set 3:

1. Budding → e) Asexual
2. Seed → b) Germination
3. Wind → a) Pollination
4. Warmth → d) Reproduction
5. Flower → c) Ovule

IV. Multi-Correct Answer Type Questions:

1. Which of these are methods of pollination?

Ans: a) Wind, b) Insects

2. What are the requirements for seed germination?

Ans: a) Water, b) Oxygen, c) Warmth

3. Which are types of asexual reproduction?

Ans: a) Budding, b) Fragmentation, c) Grafting

4. What parts are involved in the male reproductive system?

Ans: A: a) Stamen, b) Filament, c) Anther

5. Which are agents of seed dispersal?

Ans: a) Wind, b) Water, c) Animals

6. What are benefits of seed dispersal?

Ans: a) Less competition, b) Colonization, c) Species spread

7. What are features of seeds dispersed by wind?

Ans: a) Lightweight, b) Wings, c) Hairy

8. Which processes involve gametes?

Ans: a) Fertilization, b) Sexual reproduction

9. Which are examples of underground stems?

Ans: a) Rhizome, b) Tuber, c) Bulb

10. Which plants reproduce through spores?

Ans: a) Ferns, b) Mosses

11. What conditions favor vegetative propagation?

Ans: a) Moist soil, b) Nutrients, c) Proper temperature

12. Which are parts of the pistil?

Ans: a) Stigma, b) Style, c) Ovary

V. Reasoning Type Questions:

1. **Assertion:** Pollination is essential for seed production.

Reason: Pollination transfers pollen to the ovary.

Ans: (a) Both correct, R explains A.

2. **Assertion:** Vegetative propagation produces identical plants.
Reason: It involves the fusion of male and female gametes.
Ans: (c) Assertion correct, Reason incorrect.
3. **Assertion:** Seeds can germinate without oxygen.
Reason: Oxygen is necessary for respiration during germination.
Ans: (d) Assertion incorrect, Reason correct.
4. **Assertion:** Wind helps in seed dispersal.
Reason: Seeds dispersed by wind are usually lightweight.
Ans: (a) Both correct, R explains A.
5. **Assertion:** Asexual reproduction is faster than sexual reproduction.
Reason: Asexual reproduction does not involve gametes.
Ans: (a) Both correct, R explains A.
6. **Assertion:** Flowers are essential for plant reproduction.
Reason: Flowers always produce seeds.
Ans: (c) Assertion correct, Reason incorrect.
7. **Assertion:** Fertilization occurs after pollination.
Reason: Fertilization involves the fusion of gametes.
Ans: (a) Both correct, R explains A.
8. **Assertion:** Fruits protect seeds during development.
Reason: Fruits are formed from the ovary of the flower.
Ans: (a) Both correct, R explains A.
9. **Assertion:** Pollen grains are produced in the stamen.
Reason: The stamen is the male reproductive part of the flower.
Ans: (a) Both correct, R explains A.
10. **Assertion:** Fertilized ovules develop into seeds.
Reason: Fertilization leads to the formation of the zygote.
Ans: (a) Both correct, R explains A.

VI. Choose the Odd Man Out:

1. **Ans:** b) Pollination (*Others are asexual reproduction methods*)
2. **Ans:** c) Seed (*Others are dispersal agents*)
3. **Ans:** d) Petal (*Others are reproductive parts*)
4. **Ans:** d) Fern (*Others are vegetative propagation examples*)
5. **Ans:** b) Ovule (*Others are parts of stamen/pistil*)
6. **Ans:** d) Rhizomes (*Others are seed-related structures*)
7. **Ans:** c) Wings (*Others attract pollinators; wings aid wind dispersal*)
8. **Ans:** b) Soil (*Others are germination requirements*)
9. **Ans:** d) Onion (*Others reproduce via spores*)
10. **Ans:** c) Anther (*Others are pistil parts*)

VII. Answer the Following Questions:

1. What is asexual reproduction in plants?

Ans: Asexual reproduction in plants is the process by which new plants grow from a single parent without the involvement of seeds. It happens through structures like roots, stems, or leaves.

2. Write short notes on sexual reproduction in plants.

Ans: Sexual reproduction in plants involves the fusion of male and female gametes to form seeds. It requires flowers, where pollination and fertilization occur to produce new plants.

3. How does vegetative propagation occur through (i) Roots (ii) Stems (iii) Leaves?

Ans: Vegetative propagation occurs through

Roots: Sweet potato (tuberous roots).

Stems: Potato (tubers), ginger (rhizomes).

Leaves: Bryophyllum (leaf margins develop plantlets).

4. Write the three artificial methods of vegetative propagation.

Ans: The three artificial methods of vegetative propagation are cutting, layering, and grafting. These methods help in growing plants faster and with desired qualities.

5. Write any three advantages of vegetative propagation.

Ans: Vegetative propagation is quick, produces plants exactly like the parent, and helps grow seedless plants. It is commonly used in gardening and agriculture.

6. Write the different parts of a flower.

Ans: The different parts of a flower are sepals, petals, stamens (male part), and pistil (female part). Each part plays a role in the reproduction of the plant.

7. Explain pollination and its types.

Ans: Pollination is the transfer of pollen from the anther to the stigma of a flower. It is of two types: self-pollination (same flower) and cross-pollination (different flowers).

8. Write the different agents of pollination.

Ans: The different agents of pollination are wind, water, insects, birds, and animals. These agents help transfer pollen to ensure fertilization.

9. Write short notes on: (i) Budding (ii) Grafting.

Ans: (i) Budding is a type of asexual reproduction where a new organism develops from a small outgrowth or bud, like in yeast.

(ii) Grafting is an artificial method where parts of two plants are joined to grow as one, often used in fruit plants.

10. What is germination of seeds?

Ans: Germination of seeds is the process by which a seed develops into a new plant. It begins when the seed gets water, air, and suitable temperature for growth.

EXERCISE - 3

I. Choose the Correct Answer

1. What is the component responsible for transport in blood?
Ans: a) Plasma
2. Which molecule is responsible for transporting oxygen?
Ans: a) Hemoglobin
3. Which type of blood cells fight infections?
Ans: a) WBC
4. What is the fluid part of blood called?
Ans: a) Plasma
5. What is the primary function of platelets?
Ans: a) Clotting
6. Which organ pumps blood in the body?
Ans: a) Heart
7. The heart is primarily made of what tissue?
Ans: a) Muscle
8. Arteries carry blood in which direction?
Ans: a) Away
9. What do veins carry?
Ans: a) Blood
10. What connects arteries and veins?
Ans: a) Capillaries
11. What structure divides the heart into chambers?
Ans: a) Septum
12. What is the largest artery in the body?
Ans: a) Aorta
13. Oxygenated blood flows through which type of vessel?
Ans: a) Arteries
14. How many chambers does the human heart have?
Ans: a) Four
15. What does the pulmonary vein carry?
Ans: a) Oxygen
16. Blood pressure is measured in which unit?
Ans: a) mmHg
17. A heart attack affects which process?
Ans: a) Blood flow
18. What is the pacemaker of the heart?
Ans: a) SA node
19. Which blood group is known as the universal donor?
Ans: a) O
20. What are the smallest blood vessels called?
Ans: a) Capillaries
21. Which organ produces lymph?
Ans: a) Spleen
22. What is a lymphocyte?
Ans: a) WBC
23. What is the fluid in the lymphatic system called?
Ans: a) Lymph
24. What is the process of circulation?
Ans: a) Blood movement
25. What is the largest vein in the body?
Ans: a) Vena cava
26. What does diastole represent in the cardiac cycle?
Ans: a) Relaxation
27. What phase represents the contraction of the heart?
Ans: a) Systole
28. What does pulse rate measure?
Ans: a) Beats
29. What is another term for high blood pressure?
Ans: a) Hypertension
30. What is transported by blood?
Ans: a) Nutrients
31. What is another name for red blood cells?
Ans: a) Erythrocyte
32. What does plasma transport in the body?
Ans: a) Nutrients
33. Which substance carries carbon dioxide?
Ans: a) Blood
34. What type of molecule is an antigen?
Ans: a) Protein
35. What type of tissue pumps blood?
Ans: a) Cardiac
36. Where is the heart located in the body?
Ans: a) Chest
37. Which vessel carries deoxygenated blood?
Ans: a) Vein
38. What is hemophilia?
Ans: a) Bleeding disorder

II. Say True or False

- | | |
|--|-------------------|
| 1. Blood transports oxygen to body cells. | Ans: True |
| 2. Lymphocytes are a type of white blood cell. | Ans: True |
| 3. Veins carry blood away from the heart. | Ans: False |
| 4. Arteries carry oxygenated blood. | Ans: True |
| 5. The heart has four chambers. | Ans: True |
| 6. Platelets help in blood clotting. | Ans: True |
| 7. Valves prevent backflow of blood. | Ans: True |
| 8. Lymph is a part of the circulatory system. | Ans: True |
| 9. Capillaries connect arteries and veins. | Ans: True |
| 10. Blood pressure is measured in mmHg. | Ans: True |
| 11. SA node acts as the heart's pacemaker. | Ans: True |
| 12. Oxygenated blood enters the right atrium. | Ans: False |
| 13. The aorta is the largest artery. | Ans: True |
| 14. Veins have thinner walls than arteries. | Ans: True |
| 15. Cardiac muscles contract involuntarily. | Ans: True |
| 16. The vena cava is a large vein. | Ans: True |
| 17. Carbon dioxide is transported by blood. | Ans: True |
| 18. Diastole refers to heart relaxation. | Ans: True |
| 19. The heart is located in the chest cavity. | Ans: True |
| 20. Red blood cells are called leukocytes. | Ans: False |

III. Match the Following

Set 1:

- | | |
|---------------|-------------------|
| 1. Hemoglobin | → d) Oxygen |
| 2. Platelets | → b) Clotting |
| 3. Veins | → e) Deoxygenated |
| 4. Arteries | → c) Oxygenated |
| 5. Plasma | → a) Nutrients |

Set 2:

- | | |
|--------------|----------------|
| 1. Heart | → c) Pump |
| 2. Aorta | → a) Artery |
| 3. Vena cava | → e) Vein |
| 4. Capillary | → b) Connect |
| 5. SA node | → d) Pacemaker |

Set 3:

1. Hypertension → b) Pressure
2. Septum → e) Divider
3. Pulmonary → d) Lung
4. Circulation → a) Blood
5. Ventricle → c) Chamber

IV. Multi-Correct Answer Type Questions

- | | |
|---|---|
| 1. Which among these are components of blood? | Ans: a) Plasma, b) RBC |
| 2. Which among these are types of blood cells? | Ans: a) RBC, b) WBC, c) Platelet |
| 3. Which among these are functions of blood? | Ans: a) Transport, b) Defense |
| 4. Which among these are chambers of the heart? | Ans: a) Atrium, b) Ventricle |
| 5. What increases blood pressure? | Ans: a) Stress, b) Smoking |
| 6. What are types of circulation? | Ans: a) Pulmonary, b) Systemic |
| 7. Which are functions of plasma? | Ans: a) Transport, b) Clotting |
| 8. What do white blood cells do? | Ans: a) Fight, b) Defend |
| 9. What is carried by the blood? | Ans: a) Oxygen, b) Nutrients |
| 10. Which vessels have valves? | Ans: a) Veins |
| 11. Which blood cells transport oxygen? | Ans: a) RBC |
| 12. What regulates heartbeats? | Ans: a) SA node, b) AV node |

V. Reasoning Type Questions

1. **Assertion:** Blood carries oxygen to body tissues.
Reason: Red blood cells contain hemoglobin.
Ans: (a) Both correct, R explains A.
2. **Assertion:** Platelets help in blood clotting.
Reason: Platelets release clotting factors.
Ans: (a) Both correct, R explains A.
3. **Assertion:** Arteries carry oxygen-rich blood.
Reason: They have thick, elastic walls.
Ans: (b) Both correct, but R does not explain A.
4. **Assertion:** Veins carry deoxygenated blood.
Reason: Veins have valves to prevent backflow.
Ans: (b) Both correct, but R does not explain A.
5. **Assertion:** Blood plasma is a fluid.
Reason: Plasma transports nutrients and waste.
Ans: (b) Both correct, but R does not explain A.
6. **Assertion:** SA node is the pacemaker of the heart.
Reason: It regulates heart contraction rhythm.
Ans: (a) Both correct, R explains A.

7. **Assertion:** Aorta is the largest artery.
Reason: It pumps blood from the lungs.
Ans: (c) Assertion correct, Reason incorrect.
8. **Assertion:** Blood pressure is measured in mmHg.
Reason: Blood flow creates pressure in vessels.
Ans: (a) Both correct, R explains A.
9. **Assertion:** Systole refers to heart contraction.
Reason: It causes blood to be pumped out.
Ans: (a) Both correct, R explains A.
10. **Assertion:** Lymph is part of body circulation.
Reason: Lymph transports oxygen and carbon dioxide.
Ans: (c) Assertion correct, Reason incorrect.
11. **Assertion:** Pulse is the rate of heartbeats.
Reason: Pulse is felt in arteries.
Ans: (a) Both correct, R explains A.
12. **Assertion:** Hemophilia is a clotting disorder.
Reason: It affects red blood cell production.
Ans: (c) Assertion correct, Reason incorrect.
13. **Assertion:** High blood pressure is hypertension.
Reason: It reduces heart contraction force.
Ans: (c) Assertion correct, Reason incorrect.
14. **Assertion:** Carbon dioxide is transported in blood.
Reason: Hemoglobin carries carbon dioxide.
Ans: (a) Both correct, R explains A.
15. **Assertion:** Oxygenated blood flows in veins.
Reason: Pulmonary veins carry oxygen-rich blood.
Ans: (a) Both correct, R explains A.

VI. Choose the Odd Man Out

1. **Ans:** d) Plasma (*Others are blood cells*)
2. **Ans:** d) Nerve (*Others are blood vessels*)
3. **Ans:** b) Kidney (*Others are circulatory system parts*)
4. **Ans:** d) Hemoglobin (*Others are substances transported by blood*)
5. **Ans:** d) Clot (*Others are heart-related terms*)
6. **Ans:** c) Hypertension (*Others are types of circulation*)
7. **Ans:** c) Aorta (*Others are heart components*)
8. **Ans:** d) Lymph (*Others are blood components*)
9. **Ans:** a) Septum (*Others are vessels or structures in vessels*)
10. **Ans:** d) Bone (*Others are fluids or fluid components*)

VII. Answer the Following Questions

1. Write about blood and its composition.

Ans: Blood is composed of plasma (55%) and blood cells (45%). Plasma is a yellowish fluid containing water, proteins, salts, and nutrients. Blood cells include:

- RBCs (Erythrocytes): Carry oxygen via hemoglobin.
- WBCs (Leukocytes): Fight infections.
- Platelets (Thrombocytes): Aid in clotting.

2. Write about lymph and its composition.

Ans: Lymph is a colorless fluid derived from tissue fluid. It contains:

- Lymphocytes (WBCs) for immunity.
- Proteins, fats, and waste products.
- No RBCs or platelets.

3. What are the major functions of RBC?

Ans: Transport oxygen from lungs to tissues.

Carry carbon dioxide back to the lungs.

Contain hemoglobin for gas exchange.

4. What are the major functions of WBC?

Ans: Defend against pathogens (bacteria, viruses).

Produce antibodies.

Remove dead cells and debris.

5. What are the major functions of platelets?

Ans: Form blood clots to stop bleeding.

Release clotting factors (e.g., fibrin).

6. What is coagulation of blood?

Ans: The process where blood changes from liquid to gel, forming a clot to prevent excessive bleeding. It involves platelets and clotting factors (e.g., fibrinogen → fibrin).

7. Write short notes on human heart.

Ans: **Structure:** 4 chambers (2 atria, 2 ventricles), valves, and major vessels (aorta, vena cava).

Function: Pumps oxygenated blood to the body and deoxygenated blood to the lungs.

Cardiac Cycle: Systole (contraction) and diastole (relaxation).

8. Write any three disorders of circulatory system.

Ans: **Hypertension:** High blood pressure.

Atherosclerosis: Artery narrowing due to plaque.

Hemophilia: Inherited bleeding disorder.

9. What is hypertension?

Ans: A condition where blood pressure is chronically elevated ($\geq 130/80$ mmHg), risking heart disease and stroke. Causes include stress, poor diet, and genetics.

10. Write the diets recommended for a healthy circulatory system.

Ans: Low-sodium: Reduces blood pressure.

- **High-fiber:** Lowers cholesterol (oats, fruits).
- **Omega-3 fatty acids:** Found in fish, nuts (reduce inflammation).
- **Antioxidant-rich:** Berries, leafy greens (prevent artery damage).

EXERCISE - 4

I. Choose the Correct Answer:

- | | |
|---|--------------------------------|
| 1. What is the area called where animals are protected? | Ans: a) Sanctuary |
| 2. What is a large, protected area designated for wildlife? | Ans: a) Reserve |
| 3. Which of the following activities helps conserve biodiversity? | Ans: a) Recycling |
| 4. What do animals face when they lose their natural habitat? | Ans: a) Extinction |
| 5. What term refers to plant species that are facing extinction? | Ans: a) Endangered |
| 6. What is the process of cutting down trees called? | Ans: a) Deforestation |
| 7. What happens when soil is washed away from the land? | Ans: a) Erosion |
| 8. What term refers to the illegal hunting of animals? | Ans: a) Poaching |
| 9. What term describes animals that no longer exist on Earth? | Ans: a) Extinct |
| 10. What is Kaziranga National Park famous for? | Ans: a) Rhinos |
| 11. Which of the following animals is classified as endangered? | Ans: a) Tiger |
| 12. What do national parks aim to protect? | Ans: a) Animals |
| 13. What does the Red Data Book list? | Ans: a) Species |
| 14. Which human action is harmful to forests? | Ans: a) Logging |
| 15. What term describes a species that no longer exists? | Ans: a) Extinct |
| 16. Which organism is an example of flora? | Ans: a) Tree |
| 17. What is the main reason behind the extinction of animals? | Ans: a) Hunting |
| 18. What does the term "poaching" refer to? | Ans: a) Illegal hunting |
| 19. Which type of area is created to protect endangered species? | Ans: a) Reserve |
| 20. Which of the following is a renewable resource? | Ans: a) Water |
| 21. What is a collection of preserved plant specimens called? | Ans: a) Herbarium |
| 22. Which of the following is an example of fauna? | Ans: a) Deer |
| 23. What does overgrazing cause? | Ans: a) Erosion |
| 24. What impact do human settlements near forests have? | Ans: a) Destruction |
| 25. What do forests provide that is essential for life? | Ans: a) Oxygen |
| 26. What is the process of replanting trees called? | Ans: a) Afforestation |
| 27. What does excessive hunting of animals lead to? | Ans: a) Extinction |
| 28. What is the term used for water shortage? | Ans: a) Drought |
| 29. How does deforestation affect the environment? | Ans: a) Climate |
| 30. What are wildlife sanctuaries designed to do? | Ans: a) Protect |
| 31. What does biodiversity refer to? | Ans: a) Variety |
| 32. What is the result of excess carbon in the atmosphere? | Ans: a) Pollution |

33. How do desert animals adapt to survive?
34. Where are tigers specially protected?
35. How is vegetation typically found in a desert?
36. Which of the following is a non-renewable resource?

Ans: a) Storing
Ans: a) Reserves
Ans: a) Sparse
Ans: a) Coal

II. Say True or False

- | | |
|--|-------------------|
| 1. Deforestation leads to soil erosion. | Ans: True |
| 2. A sanctuary protects wild animals. | Ans: True |
| 3. Poaching helps in conserving wildlife. | Ans: False |
| 4. Flora refers to plant life in an area. | Ans: True |
| 5. Tigers are listed as an endangered species. | Ans: True |
| 6. Red Data Book lists extinct species. | Ans: True |
| 7. Biosphere reserves conserve biodiversity. | Ans: True |
| 8. Kaziranga is known for its elephants. | Ans: False |
| 9. Endemic species are found worldwide. | Ans: False |
| 10. Cutting trees is called afforestation. | Ans: False |
| 11. Biodiversity means variety of life forms. | Ans: True |
| 12. Erosion occurs when soil is removed. | Ans: True |
| 13. Pollution harms the natural environment. | Ans: True |
| 14. Plants and animals are natural resources. | Ans: True |
| 15. A drought refers to excess rainfall. | Ans: False |
| 16. Reserves are created to protect wildlife. | Ans: True |
| 17. Illegal hunting is known as poaching. | Ans: True |
| 18. Coal is a non-renewable resource. | Ans: True |
| 19. Deserts have dense and thick vegetation. | Ans: False |
| 20. Water is a renewable resource. | Ans: True |

III. Match the Following

Set 1:

- | | |
|------------------|---------------|
| 1. Sanctuary | → c) Wildlife |
| 2. Deforestation | → d) Trees |
| 3. Poaching | → b) Hunting |
| 4. Flora | → a) Plants |
| 5. Fauna | → e) Animals |

Set 2:

- | | |
|------------|-----------------|
| 1. Hunting | → b) Illegal |
| 2. Reserve | → d) Protection |
| 3. Species | → a) Diversity |
| 4. Soil | → e) Erosion |
| 5. Rain | → c) Water |

Set 3:

1. Biosphere → c) Reserve
2. Endangered → d) Species
3. Pollution → b) Environment
4. Afforestation → e) Replanting
5. Erosion → a) Soil

IV. Multi-Correct Answer Type Questions

1. What are renewable energy sources? **Ans:** a) Wind, b) Solar
2. What causes deforestation? **Ans:** a) Logging, b) Mining
3. Which animals are endangered? **Ans:** a) Tiger, b) Elephant
4. What affects biodiversity? **Ans:** a) Pollution, b) Hunting
5. Which are fossil fuels? **Ans:** a) Coal, b) Oil
6. What are examples of flora? **Ans:** a) Trees, b) Grass
7. Which are natural disasters? **Ans:** a) Drought, b) Earthquake
8. What are threats to wildlife? **Ans:** a) Poaching, b) Deforestation
9. What helps conserve soil? **Ans:** a) Afforestation, b) Crop rotation
10. Which are examples of fauna? **Ans:** a) Deer, b) Elephant

V. Reasoning Type Questions

1. **Assertion:** Deforestation causes soil erosion.
Reason: Trees help in holding soil together.
Ans: (a) Both correct, R explains A.
2. **Assertion:** Biodiversity means variety of life forms.
Reason: It includes only animals in an area.
Ans: (c) Assertion correct, Reason incorrect.
3. **Assertion:** Poaching threatens animal populations.
Reason: It is a form of conservation.
Ans: (c) Assertion correct, Reason incorrect.
4. **Assertion:** Extinct species cannot be revived.
Reason: Extinction means permanent loss of life.
Ans: (a) Both correct, R explains A.
5. **Assertion:** Afforestation helps in conserving forests.
Reason: Planting trees reduces deforestation.
Ans: (a) Both correct, R explains A.
6. **Assertion:** Desert vegetation is sparse.
Reason: Deserts have very little rainfall.
Ans: (a) Both correct, R explains A.
7. **Assertion:** Tigers are endangered species.
Reason: Habitat destruction affects tiger survival.

Ans: (a) Both correct, R explains A.

8. **Assertion:** Biosphere reserves protect biodiversity.

Reason: They conserve only aquatic life.

Ans: (c) Assertion correct, Reason incorrect.

9. **Assertion:** National parks protect wildlife habitats.

Reason: They are free from human activity.

Ans: (b) Both correct, but R does not explain A.

10. **Assertion:** Red Data Book lists rare species.

Reason: It helps track conservation status.

Ans: (a) Both correct, R explains A.

11. **Assertion:** Pollution affects air and water quality.

Reason: Industries release harmful substances.

Ans: (a) Both correct, R explains A.

12. **Assertion:** Renewable resources can be replenished.

Reason: Water and solar energy are examples.

Ans: (a) Both correct, R explains A.

13. **Assertion:** Drought is caused by water scarcity.

Reason: Overuse of groundwater leads to drought.

Ans: (a) Both correct, R explains A.

14. **Assertion:** Forest fire causes deforestation.

Reason: Volcanos erupts carbon dioxide which pose a significant threat to wildlife.

Ans: (c) Assertion correct, Reason incorrect.

VI. Choose the Odd Man Out

1. **Ans:** d) Cactus (*Others are animals*)
2. **Ans:** a) Coal (*Others are renewable resources*)
3. **Ans:** c) Mining (*Others are conservation-related terms*)
4. **Ans:** d) Eagle (*Others are flora*)
5. **Ans:** b) Logging (*Others promote conservation*)
6. **Ans:** b) Recycling (*Others are threats to the environment*)
7. **Ans:** c) Maple (*Others are fauna*)
8. **Ans:** b) Erosion (*Others are natural resources*)
9. **Ans:** a) Habitat (*Others are species classifications*)
10. **Ans:** d) Coal (*Others are water bodies*)

VII. Answer the Following Questions

1. What is biodiversity?

Ans: Biodiversity refers to the variety of living organisms like plants, animals, and microorganisms found in a particular region or on Earth. It helps maintain balance in nature and supports life on the planet.

2. What are the major threats to biodiversity?

Ans: Major threats to biodiversity include deforestation, pollution, habitat destruction, hunting, and climate change. These factors lead to the loss of species and natural habitats.

3. What are the major causes of deforestation?

Ans: The major causes of deforestation are cutting trees for agriculture, urbanization, timber, mining, and building roads. Human activities are the main reason for large-scale destruction of forests.

4. What are the consequences of deforestation?

Ans: Deforestation leads to loss of biodiversity, soil erosion, climate change, and reduction in rainfall. It also increases the chances of natural disasters like floods and droughts.

5. What is wildlife?

Ans: Wildlife refers to all wild animals, birds, and plants that live naturally in forests, oceans, and other habitats. They play an important role in maintaining ecological balance.

6. What is a threatened species?

Ans: Threatened species are animals or plants that are at risk of becoming endangered or extinct in the near future. Their numbers are rapidly declining due to various environmental threats.

7. Write the strategies used to conserve wildlife.

Ans: Strategies to conserve wildlife include setting up national parks, wildlife sanctuaries, banning hunting, and running awareness programs. Protecting natural habitats is also an important step.

8. Explain migration of animals.

Ans: Migration of animals is the seasonal movement of animals from one region to another in search of food, better climate, or for breeding. Birds, whales, and some fishes are known to migrate.

9. How can we conserve forests?

Ans: We can conserve forests by planting more trees, preventing illegal cutting, recycling paper, and spreading awareness about the importance of forests. Government protection programs also help.

10. What is captive breeding?

Ans: Captive breeding is the process of breeding wild animals in controlled environments like zoos or wildlife reserves. It helps increase the population of endangered species.

11. What is a vulnerable species?

Ans: Vulnerable species are those that are likely to become endangered in the near future if proper care is not taken. Their population is decreasing due to habitat loss or other threats.

12. What is an extinct species?

Ans: Extinct species are those species that no longer exist anywhere on Earth. Dinosaurs are an example of extinct species.

EXERCISE - 5

I. Choose the Correct Answer

1. What is the primary nutrient required for plant growth?
Ans: a) Nitrogen
2. Which tool is used for plowing fields?
Ans: a) Hoe
3. Which process involves turning the soil?
Ans: a) Plowing
4. What is added to soil to improve fertility?
Ans: a) Fertilizer
5. Which is a rabi crop?
Ans: a) Wheat
6. What is the process of scattering seeds?
Ans: a) Sowing
7. Which method of irrigation uses pipes for water distribution?
Ans: b) Drip
8. What is the removal of weeds called?
Ans: a) Weeding
9. Which is an example of organic manure?
Ans: a) Compost
10. What is the purpose of crop rotation?
Ans: a) Reduce pests
11. Which crop requires abundant water?
Ans: a) Rice
12. Which among these is a kharif crop?
Ans: a) Rice
13. Which among these is a traditional irrigation method?
Ans: a) Moat
14. What is the process of separating grains from chaff?
Ans: a) Winnowing
15. What is the primary pest control method?
Ans: a) Pesticides
16. Which part of a plant absorbs nutrients?
Ans: a) Root
17. What is the interval between planting and harvesting called?
Ans: b) Crop cycle
18. Which tool is used for sowing seeds?
Ans: a) Seed drill
19. Which type of soil is best for growing rice?
Ans: a) Clayey
20. Which gas is essential for photosynthesis?
Ans: a) Carbon dioxide
21. What is the main goal of irrigation?
Ans: a) Provide water
22. Which microorganism improves soil fertility?
Ans: a) Rhizobium
23. What is the ideal pH for most crops?
Ans: a) 6-7
24. Which nutrient is associated with green leaves?
Ans: a) Nitrogen
25. What is the product of threshing?
Ans: a) Grains
26. Which irrigation method conserves the most water?
Ans: a) Drip
27. What is a monoculture?
Ans: a) Single crop
28. Which pest affects cotton crops?
Ans: a) Bollworm
29. Which crop is grown during winter?
Ans: a) Wheat
30. Which method is used to protect crops from frost?
Ans: a) Mulching
31. What is used to add nitrogen to the soil naturally?
Ans: a) Legumes
32. What is an example of a cereal crop?
Ans: a) Wheat
33. What is the main component of chemical fertilizers?
Ans: a) Nitrogen
34. What is required for germination?
Ans: a) Water
35. What is the process of loosening soil?
Ans: a) Tilling
36. What helps prevent soil erosion?
Ans: a) Contour plowing

II. Say True or False

- | | |
|---|-------------------|
| 1. Paddy is a kharif crop. | Ans: True |
| 2. Fertilizers increase soil fertility. | Ans: True |
| 3. Wheat is grown in the summer season. | Ans: False |
| 4. Irrigation is essential for crops. | Ans: True |
| 5. Manure is made from organic waste. | Ans: True |
| 6. Weeds benefit crop growth. | Ans: False |
| 7. Pesticides protect crops from pests. | Ans: True |
| 8. Barley is a type of rabi crop. | Ans: True |
| 9. Crop rotation depletes soil nutrients. | Ans: False |
| 10. Sugarcane requires a lot of water. | Ans: True |
| 11. Leguminous plants fix nitrogen in soil. | Ans: True |
| 12. Drip irrigation conserves water. | Ans: True |
| 13. Cereal crops are grown for fiber. | Ans: False |
| 14. Compost is a type of fertilizer. | Ans: True |
| 15. Hoe is used to remove weeds. | Ans: True |
| 16. Sprinkler irrigation wastes water. | Ans: False |
| 17. Kharif crops are grown in winter. | Ans: False |
| 18. Rice is a type of food crop. | Ans: True |
| 19. Hybrid seeds are disease-resistant. | Ans: True |
| 20. Weeding is done after harvesting. | Ans: False |
| 21. Plants need carbon dioxide to grow. | Ans: True |
| 22. Pulses are a source of protein. | Ans: True |
| 23. Flooding fields improves crop yield. | Ans: False |
| 24. Crops can grow without sunlight. | Ans: False |
| 25. Nitrogen is essential for plant growth. | Ans: True |

III. Match the Following

Set 1:

- | | |
|---------------|-----------------|
| 1. Plough | → c) Tilling |
| 2. Hoe | → a) Weeding |
| 3. Sprinkler | → e) Irrigation |
| 4. Seed Drill | → b) Sowing |
| 5. Harrow | → d) Leveling |

Set 2:

- | | |
|------------|---------------|
| 1. Urea | → e) Chemical |
| 2. Manure | → a) Organic |
| 3. Compost | → d) Organic |
| 4. Gypsum | → c) Salinity |
| 5. Lime | → b) pH |

Set 3:

1. Pulses → d) Food
2. Cotton → e) Fiber
3. Rice → c) Cereal
4. Tea → a) Beverage
5. Wheat → c) Cereal

IV. Multi-Correct Answer Type Questions

1. Which are kharif crops? **Ans:** a) Rice, c) Maize
2. Which tools are used for ploughing? **Ans:** a) Plough, b) Harrow, c) Hoe
3. Which are Rabi crops? **Ans:** a) Wheat, b) Gram
4. What enriches soil fertility? **Ans:** a) Compost, b) Fertilizer
5. Which require irrigation? **Ans:** a) Barley, b) Wheat, c) Paddy
6. What are food crops? **Ans:** a) Rice, b) Pulses
7. Which pests harm crops? **Ans:** a) Locusts, b) Caterpillars
8. Which methods conserve water? **Ans:** b) Sprinkler, c) Drip
9. What improves soil texture? **Ans:** b) Fertilizers, c) Manure
10. Which crops need more water? **Ans:** a) Paddy, b) Sugarcane

V. Reasoning Type Questions

1. **Assertion:** Manure improves soil fertility.
Reason: It adds organic matter to the soil.
Ans: (a) Both correct, R explains A.
2. **Assertion:** Paddy is grown in rainy season.
Reason: Paddy requires large amounts of water.
Ans: (a) Both correct, R explains A.
3. **Assertion:** Crop rotation is beneficial.
Reason: It prevents nutrient depletion in soil.
Ans: (a) Both correct, R explains A.
4. **Assertion:** Fertilizers increase crop yield.
Reason: They supply nutrients to plants.
Ans: (a) Both correct, R explains A.
5. **Assertion:** Kharif crops need irrigation.
Reason: They are grown in dry seasons.
Ans: (e) Both incorrect (*Kharif crops rely on monsoon rains.*)
6. **Assertion:** Weeding is essential for crops.
Reason: Weeds compete for nutrients and sunlight.
Ans: (a) Both correct, R explains A.

7. **Assertion:** Hybrid seeds have high yield.
Reason: They are disease-resistant.
Ans: (b) Both correct, but R doesn't fully explain A (*Also drought-resistant.*)
8. **Assertion:** Sprinkler irrigation saves water.
Reason: It reduces evaporation losses.
Ans: (a) Both correct, R explains A.
9. **Assertion:** Ploughing improves soil aeration.
Reason: It loosens the soil.
Ans: (a) Both correct, R explains A.
10. **Assertion:** Wheat is a Rabi crop.
Reason: It grows in cool weather conditions.
Ans: (a) Both correct, R explains A.

VI. Choose the Odd Man Out

1. **Ans:** d) Cotton (*Others are food crops; cotton is a fiber crop.*)
2. **Ans:** d) Seed (*Others are farming tools.*)
3. **Ans:** d) Plastic (*Others improve soil fertility.*)
4. **Ans:** c) Wheat (*Rabi crop; others are kharif crops.*)
5. **Ans:** d) Oxygen (*Others are crop pests.*)
6. **Ans:** d) Tilling (*Others are irrigation methods.*)
7. **Ans:** d) Harvest (*Others are pre-harvest activities.*)
8. **Ans:** c) Rice (*Others are pulses/legumes.*)
9. **Ans:** d) Insecticide (*Others are fertilizers/nutrients.*)
10. **Ans:** b) Cotton (*Others are food/beverage crops.*)

VII. Answer the Following Questions

1. What is horticulture?

Ans: Horticulture is the branch of agriculture that deals with the cultivation of fruits, vegetables, flowers, and ornamental plants. It focuses on improving the growth, quality, and production of these plants.

2. What are kharif and rabi crops?

Ans: Kharif crops are grown in the rainy season, from June to October, like rice, maize, and cotton.

Rabi crops are grown in the winter season, from October to March, like wheat, barley, and mustard.

3. Write the steps of preparing the soil for crop production.

Ans: The steps in preparing the soil for crop production include ploughing to loosen the soil, leveling to break clumps, and manuring to enrich the soil with nutrients. These steps help in healthy crop growth. Explain manuring.

4. Explain manuring.

Ans: Manuring is the process of adding organic or chemical fertilizers to the soil to provide essential nutrients for plants. It helps in improving soil fertility and increasing crop yield.

5. What is irrigation? Explain its purpose.

Ans: Irrigation is the artificial supply of water to crops at regular intervals. Its purpose is to ensure plants get enough water for their growth, especially in areas with low rainfall.

6. What is weeding? Give some methods of weeding.

Ans: Weeding is the removal of unwanted plants (weeds) from crop fields that compete with crops for nutrients, water, and light. Methods of weeding include hand-pulling, using weeders, and spraying herbicides.

7. How crops are protected?

Ans: Crops are protected by using pesticides, insecticides, and proper storage techniques. Fencing and scarecrows are also used to keep away animals and birds.

8. Write the steps to control pests in stored grains.

Ans: To control pests in stored grains, grains should be dried properly, stored in clean and airtight containers, and treated with fumigants or pest repellents. Regular checking of stored grains is also important.

9. What is green revolution?

Ans: The Green Revolution refers to the period when new methods like high-yield variety seeds, chemical fertilizers, and modern equipment were used in agriculture. It led to a big increase in food production in India during the 1960s.

10. Write short notes on crop harvesting.

Ans: Crop harvesting is the process of cutting and collecting mature crops from the field. After harvesting, crops are dried, threshed to remove seeds, and stored properly for future use.

EXERCISE - 6

I. Choose the Correct Answer

1. What is the basic unit of life?
2. Which organelle controls cell activities?
3. Which of the following is found in plant cells?
4. What does the cell wall provide?
5. Where is the cytoplasm found?
6. What surrounds a cell?
7. Which organelle is known as the powerhouse of the cell?
8. What do chromosomes contain?
9. Ribosomes are responsible for?
10. Which organelle gives color to flowers?
11. Lysosomes are also known as _____?
12. Which type of cell has a cell wall?
13. What does the nucleus contain?
14. In which organelle is chlorophyll found?
15. What do vacuoles store?
16. Which organism is single-celled?
17. What separates the contents of a cell?
18. What does DNA carry?
19. Which is the smallest cell?
20. What is the largest cell?
21. What does the cell membrane allow?
22. Where is chromatin present?
23. Which structure helps maintain cell shape?
24. Which organelle is responsible for photosynthesis?
25. What do animal cells lack?
26. Where is DNA located?
27. What stores genetic information?
28. Who discovered the cell?
29. Who proposed the cell theory?
30. What controls the permeability of a cell?
31. Which organelle stores food?
32. What do prokaryotic cells lack?
33. What is the fluid inside a cell?
34. Centrosomes are involved in?
35. Which organelle is called the powerhouse of the cell?
36. What structure helps in locomotion?
37. Which cell lacks a nucleus?
38. In which organisms are plastids found?

- Ans:** a) Cell
Ans: a) Nucleus
Ans: a) Chloroplast
Ans: a) Support
Ans: a) Cells
Ans: a) Membrane
Ans: a) Mitochondria
Ans: a) DNA
Ans: a) Protein synthesis
Ans: a) Chromoplast
Ans: a) Suicide bags
Ans: a) Plant
Ans: a) DNA
Ans: a) Chloroplast
Ans: a) Water
Ans: a) Amoeba
Ans: a) Membrane
Ans: a) Genes
Ans: a) Bacteria
Ans: a) Ostrich egg
Ans: a) Transport
Ans: a) Nucleus
Ans: a) Cell wall
Ans: a) Chloroplast
Ans: a) Cell wall
Ans: a) Nucleus
Ans: a) DNA
Ans: a) Hooke
Ans: a) Schleiden
Ans: a) Membrane
Ans: a) Vacuole
Ans: a) Nucleus
Ans: a) Cytoplasm
Ans: a) Division
Ans: a) Mitochondria
Ans: a) Flagella
Ans: a) RBC
Ans: a) Plants

39. What function do Golgi bodies perform?
40. What forms the boundary of animal cells?

Ans: a) Packaging

Ans: a) Membrane

II. Say True or False:

- | | |
|--|-------------------|
| 1. The cell is the basic unit of life. | Ans: True |
| 2. The nucleus controls cell activities. | Ans: True |
| 3. Animal cells have a cell wall. | Ans: False |
| 4. Chloroplasts are found in plant cells. | Ans: True |
| 5. Robert Hooke discovered cells. | Ans: True |
| 6. Ribosomes help in protein synthesis. | Ans: True |
| 7. The cell membrane surrounds the cell. | Ans: True |
| 8. DNA is located in the nucleus. | Ans: True |
| 9. Lysosomes are called suicide bags. | Ans: True |
| 10. Vacuoles store water and nutrients. | Ans: True |
| 11. Plant cells lack chlorophyll. | Ans: False |
| 12. Cytoplasm fills the cell. | Ans: True |
| 13. Chromosomes contain genetic material. | Ans: True |
| 14. Bacteria are multicellular organisms. | Ans: False |
| 15. Prokaryotic cells lack a nucleus. | Ans: True |
| 16. Chromatin is found in the nucleus. | Ans: True |
| 17. Amoeba is a single-celled organism. | Ans: True |
| 18. Centrosomes are involved in cell division. | Ans: True |
| 19. Flagella help in cell movement. | Ans: True |
| 20. The nucleus contains RNA. | Ans: True |
| 21. The cell wall is made of cellulose. | Ans: True |

III. Match the Following

Set 1:

- | | |
|-----------------|--------------|
| 1. Cell wall | → b) Plant |
| 2. Nucleus | → c) Control |
| 3. Ribosome | → e) Protein |
| 4. Mitochondria | → a) Energy |
| 5. Cytoplasm | → d) Fluid |

Set 2:

- | | |
|----------------|---------------------|
| 1. DNA | → e) Genes |
| 2. Chloroplast | → c) Photosynthesis |
| 3. Lysosome | → a) Digestion |
| 4. Vacuole | → b) Storage |
| 5. Membrane | → d) Boundary |

Set 3:

1. Prokaryote → c) Bacteria
2. Chromosome → d) DNA
3. Flagella → e) Movement
4. Golgi → a) Packaging
5. Centrosome → b) Division

IV. Multi-Correct Answer Type Questions:

1. Which are parts of a cell? **Ans:** a) Nucleus, b) Cytoplasm, c) Ribosome
2. What are types of cells? **Ans:** a) Plant, b) Animal, c) Bacteria
3. Which are cell organelles? **Ans:** a) Mitochondria, b) Chloroplast, c) Ribosome
4. What are found in plant cells? **Ans:** a) Cell wall, b) Chloroplast
5. Which organelles store substances? **Ans:** a) Vacuole, b) Lysosome
6. Which structures contain DNA? **Ans:** a) Nucleus, b) Chromosome
7. What are functions of the nucleus? **Ans:** a) Control, b) Storage
8. Which are cell inclusions? **Ans:** a) Granules, b) Pigments
9. What provides support in plant cells? **Ans:** a) Cell wall, b) Vacuole
10. Which cells lack a nucleus? **Ans:** a) Prokaryote, b) RBC
11. What helps in photosynthesis? **Ans:** a) Chlorophyll, b) Chloroplast
12. Which are involved in cell division? **Ans:** a) Centrosome, b) Chromosome

V. Reasoning Type Questions:

1. **Assertion:** The nucleus controls cell activities.
Reason: It contains DNA for genetic instructions.
Ans: (a) Both correct, R explains A.
2. **Assertion:** Mitochondria produce energy in cells.
Reason: They are called the powerhouse of cells.
Ans: (a) Both correct, R explains A.
3. **Assertion:** Ribosomes help in protein synthesis
Reason: Ribosomes are made of DNA molecules.
Ans: (c) Assertion correct, Reason incorrect (*Ribosomes are made of rRNA and proteins.*)
4. **Assertion:** The cell wall provides cell support.
Reason: The cell wall is made of cellulose.
Ans: (a) Both correct, R explains A.
5. **Assertion:** Animal cells lack chloroplasts.
Reason: Chloroplasts are found only in plants.
Ans: (a) Both correct, R explains A.
6. **Assertion:** Chromosomes contain genetic material.
Reason: Chromosomes are made of protein only.
Ans: (c) Assertion correct, Reason incorrect (*Chromosomes are DNA + proteins.*)

7. **Assertion:** Lysosomes are called suicide bags.
Reason: They contain enzymes for digestion.
Ans: (a) Both correct, R explains A.
8. **Assertion:** Prokaryotic cells lack a nucleus.
Reason: DNA is found in the cytoplasm.
Ans: (a) Both correct, R explains A.
9. **Assertion:** Vacuoles store water and nutrients.
Reason: Vacuoles are present in all cells.
Ans: (b) Both correct, but R doesn't explain A (*Not all cells have vacuoles.*)
10. **Assertion:** Cytoplasm fills the cell interior.
Reason: It contains organelles and enzymes.
Ans: (a) Both correct, R explains A.
11. **Assertion:** Chlorophyll is found in chloroplasts.
Reason: Chloroplasts perform photosynthesis.
Ans: (a) Both correct, R explains A.
12. **Assertion:** Golgi bodies help in packaging.
Reason: They package and transport proteins.
Ans: (a) Both correct, R explains A.
13. **Assertion:** Flagella help in cell movement.
Reason: Flagella are found in all cells.
Ans: (c) Assertion correct, Reason incorrect (*Not all cells have flagella.*)
14. **Assertion:** DNA stores genetic information.
Reason: It is found in chromosomes.
Ans: (a) Both correct, R explains A.
15. **Assertion:** Cellulose forms the cell wall.
Reason: It provides structure to plant cells.
Ans: (a) Both correct, R explains A.

VI. Choose the Odd Man Out:

1. **Ans:** d) Cellulose (*Others are organelles; cellulose is a structural component.*)
2. **Ans:** d) Oxygen (*Others are cell structures; oxygen is a gas.*)
3. **Ans:** c) Golgi (*Others are cell theory contributors; Golgi discovered Golgi bodies.*)
4. **Ans:** c) DNA (*Others are organelles/structures; DNA is a molecule.*)
5. **Ans:** d) Starch (*Others are cell structures; starch is a carbohydrate.*)
6. **Ans:** d) Vacuole (*Others are biomolecules; vacuole is an organelle.*)
7. **Ans:** d) Pigment (*Others are organelles; pigment is a molecule.*)
8. **Ans:** d) Mitochondria (*Others are organisms; mitochondria is an organelle.*)
9. **Ans:** d) Movement (*Others are structures; movement is a function.*)
10. **Ans:** d) Protein (*Others are cell parts; protein is a macromolecule.*)

VII. Answer the Following Questions:

1. Write the main points of the cell theory.

Ans: The main points of the cell theory:

- All living organisms are made of cells.
- The cell is the basic unit of life.
- New cells arise from pre-existing cells.

2. What is the difference between unicellular and multicellular organisms?

Ans: Unicellular organisms have only one cell to perform all life functions, like Amoeba.
Multicellular organisms have many cells working together, like humans and plants.

3. Define the structure of a cell.

Ans: Structure of a cell consists of three main parts:

Cell membrane: Outer boundary.

Cytoplasm: Jelly-like fluid with organelles.

Nucleus: Controls cell activities (in eukaryotes).

4. What are the main functions of the cell wall?

Ans: The main function of the cell wall is to give shape, strength, and protection to the plant cell. It is made up of cellulose and is found only in plant cells.

5. Explain cytoplasm and its function.

Ans: Cytoplasm is the jelly-like substance between the cell membrane and nucleus. It holds the cell organelles and helps in the movement of materials within the cell.

6. What are ribosomes?

Ans: Ribosomes are tiny organelles present in the cytoplasm or attached to the endoplasmic reticulum. They are responsible for making proteins in the cell.

7. Explain mitochondria and its functions.

Ans: Mitochondria are known as the 'powerhouse of the cell' because they produce energy. They break down food to release energy in the form of ATP, which is used by the cell for its activities.

8. What is the role of plastids in plants?

Ans: Plastids are organelles found in plant cells that store food and give color to plants. Chloroplasts, a type of plastid, help in photosynthesis by making food for the plant.

9. What are the functions of vacuoles?

Ans: Vacuoles are storage spaces in cells that store water, food, and waste products. In plant cells, they are large and help maintain the shape of the cell.

10. Explain the nucleus of a cell and its functions.

Ans: The nucleus is the control center of the cell and contains genetic material (DNA). It controls cell activities like growth and reproduction.

11. What are centrosomes? Write its functions.

Ans: Centrosomes are organelles found only in animal cells. They help in cell division by organizing spindle fibers during mitosis.

12. Write the difference between animal and plant cells.

Ans: Plant cells have a cell wall, large vacuole, and plastids like chloroplasts, while animal cells do not. Animal cells have centrosomes, but plant cells usually don't have them.