

GOVERNMENT OF KARNATAKA
DEPARTMENT OF EDUCATION

SCIENCE

ENGLISH MEDIUM

7

SEVENTH STANDARD Lesson Based Assessment Question Bank

2025-2026

State Education Research And Training Department
No.4, 100 feet ring road, Banashankari stage-3,
Bengaluru-85

Government of Karnataka

Department of School Education and Literacy

Lesson-Based Assessment Material

Subject: Science

7th Standard

English Medium

2025-2026

State Education Research and Training Department

**No.4, 100 Feet Ring Road. Banashankari 3rd Stage,
Bengaluru – 85**

And

DIET, Chikkaballapura

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Class: 7 Science

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Science – 7th Standard

Distribution of Marks Based on Objectives

Order	Objective	Total Marks
1	Knowledge	25
2	Understanding	30
3	Application	25
4	Analysis / Skill	20
	Total	100

Distribution of Marks Based on Types of Questions

Type of Questions	Marks Per Question	Number of Questions	Total Marks
Objective Questions (MCQ)	1	10	10
Very Short Answer	2	10	20
Short Answer	3	10	30
Long Answer	4 or 5	8	40
Total		38	100

Distribution of Marks Based on Difficulty Levels

Level	Percentage	Marks
Easy	30%	30
Average	50%	50
Difficult	20%	20
Total	100%	100

Unit-wise Marks Distribution

Lesson No.	Lesson Name	% Marks
01.	Nutrition in Plants	8
02.	Nutrition in Animals	8
03.	Heat	9
04.	Acids, Bases and Salts	10
05.	Physical and Chemical Changes	8
06.	Respiration in Organisms	8
07.	Transportation in Animals and Plants	8
08.	Reproduction in Plants	8
09.	Motion and Time	7
10.	Electric Current and its Effects	6
11.	Light	10
12.	Forests: Our Lifeline	6
13.	Wastewater Story	4
	Total Marks	100

Note: All lessons have been equally distributed, and teachers can conduct accurate evaluations with questions based on each learning objective. Questions for testing students' different levels of thinking and comprehension, including external, applied, and analytical questions, can be harmonized with the CCE process design.

Sample questions based on Lesson and learning outcomes

Unit-1:

Nutrition in plants

Learning outcomes-

1. Explaining the methods of nutrition in plants.
2. Explain the meaning of nutrition.
3. Identify the types of nutrition in plants.
4. Explain the process of photosynthesis for food preparation in green plants.
5. Identify the basic elements required for nutrition in plants.
6. Provide examples of heterotrophic plants.
7. Validate the process of photosynthesis through experimental activities.
8. Identify the role of plants in the environment.

I. Choose the correct alternative from the four alternatives provided for each of the following:

1. Organisms that can prepare food using water, carbon dioxide, and minerals are:
 - A. Plants
 - B. Animals
 - C. Birds
 - D. Humans(Easy)
2. The food factories of plants are:
 - A. Root
 - B. Stem
 - C. Leaves
 - D. Flower(Easy)
3. The gas produced during photosynthesis is:
 - A. Hydrogen
 - B. Nitrogen
 - C. Carbon dioxide
 - D. Oxygen(Average)
4. The energy absorbed by chlorophyll in leaves is:
 - A. Solar energy
 - B. Hydro energy
 - C. Wind energy
 - D. Muscular energy(Easy)

5. An example of a parasitic plant is:
- A. Cuscuta
 - B. Hydra
 - C. Yeast
 - D. Paramecium (Easy)
6. The plant that prepares its own food through photosynthesis is:
- A. Mushroom
 - B. Fungus
 - C. Yeast
 - D. Algae (Easy)
7. The pigment present in leaves is:
- A. Chlorophyll
 - B. Stomata
 - C. Minerals
 - D. Salts (Easy)
8. The type of nutrition in Mushroom is:
- A. Parasitic nutrition
 - B. Saprotrophic nutrition
 - C. Autotrophic nutrition
 - D. Photosynthesis (Easy)
9. The organism that deprives useful nutrients from host plant is:
- A. Hydra
 - B. Yeast
 - C. Cuscuta
 - D. Paramecium (Easy)
10. An example for an insectivorous plant is:
- A. Rose
 - B. Hibiscus
 - C. Pitcher plant
 - D. Sunflower (Easy)
11. This is the method by which organisms obtain nutrients from dead and decaying matter:
- A. Saprotrophic nutrition
 - B. Fungi
 - C. Parasitic
 - D. Autotrophic (Easy)
12. Food crops generally absorb a high amount of:
- A. Hydrogen
 - B. Nitrogen
 - C. Carbon
 - D. Oxygen (Easy)

13. The bacteria that helps in absorbing atmospheric nitrogen is:
- Rhizobium
 - Chlorophyll
 - Ribosome
 - Cytoplasm
- (Easy)
14. When the photosynthesis equation is completed:
- Carbon dioxide + Water $\rightarrow$ ----- + Oxygen
- Protein
 - Carbohydrate
 - Vitamin
 - Fats
- (Easy)
15. Write the following as True/False:
- Food is not available without the process of photosynthesis .
 - Humans and animals depend on plants for food.
 - Oxygen is produced in photosynthesis.
- (Easy)
16. Plants that prepare their own food are:
- Heterotrophs
 - Autotrophs
 - Saprotrophs
 - Insectivorous plants
- (Easy)
17. Food synthesized by plants is in the form of
- Starch
 - Protein
 - Vitamin
 - Fat
- (Easy)
18. The pigment that captures solar energy in photosynthesis process is:
- Green pigment
 - Red pigment
 - Brown pigment
 - Purple pigment
- (Easy)
19. Plants use --- in photosynthesis and release ---
- Oxygen and Hydrogen
 - Nitrogen and Oxygen
 - Hydrogen and Oxygen
 - Carbon dioxide and Oxygen
- (Easy)
20. The basic unit of living organisms is
- Tissue
 - Cell
 - Organ
 - Organ system
- (Easy)
21. The microscopic pore through which plants take in carbon dioxide is:
- Stomata
 - Stem
 - Root
 - Flower
- (Easy)

22. The part of the plant where most gas exchange occurs is:
- A. Root
 - B. Leaf
 - C. Stem
 - D. Flower
- (Easy)
23. The part where photosynthesis takes place is:
- A. Stem
 - B. Root
 - C. Leaf
 - D. Node
- (Easy)
24. Plants that perform photosynthesis in green stems are found in
- A. Deserts
 - B. Swamps
 - C. Mountains
 - D. Himalayan mountains
- (Average)
25. Water loss in desert plants occurs through this process:
- A. Refraction
 - B. Evaporation
 - C. Metabolism
 - D. Transpiration
- (Average)
26. The part of the plant takes in carbon dioxide for photosynthesis is
- A. Root hair
 - B. Stomata
 - C. Leaf veins
 - D. Petals
- (Easy)
27. Among these, the insectivorous plant that catches and eats insects is:
- A. Cuscuta
 - B. Pitcher plant
 - C. Hibiscus
 - D. Rose
- (Easy)
28. A partially autotrophic plant is:
- A. Algae
 - B. Fungi
 - C. Bacteria
 - D. Virus
- (Easy)

II. Match the column A with the column B:

(Average)

29.

A	B
1. Chlorophyll	A. Parasitic Plant
2. Carbon dioxide	B. Pigment found in green plants
3. Cuscuta	C. Gas needed for respiration
4. Photosynthesis	D. Process of food preparation
5. Nitrogen fixation	E. Helps plants through the air

30.

A	B
1. Photosynthesis	A. Green pigment
2. Pitcher plant	B. Parasitic plant
3. Chlorophyll	C. Food preparation
4. Cuscuta	D. Insectivorous plant

III. List three words related to the following terms:

31. Green plants (Average)
32. Heterotrophic plants (Average)
33. Elements required for food preparation (Average)

IV. Fill in the blanks with the correct answers:

34. During photosynthesis, plants use _____ gas. (Easy)
35. An example of a heterotrophic plant without green colour is: _____. (Easy)
36. The product of food preparation in photosynthesis is _____. (Easy)
37. Sun's _____ is essential for the process of photosynthesis. (Easy)
38. Green plants prepare their food through the _____ process. (Easy)
39. The pigment that gives green colour to plants is _____. (Easy)
40. Cuscuta is a _____ plant. (Easy)

V. State whether the following statements are True or False:

41. Green plants prepare their own food through photosynthesis. (Easy)
42. Pitcher plant is an autotrophic plant. (Average)
43. Carbon dioxide is not essential for photosynthesis. (Easy)
44. Chlorophyll helps in absorbing light. (Easy)
45. All plants are green in colour. (Average)
46. All plants perform photosynthesis. (Average)
47. Cuscuta is a parasitic plant. (Easy)
48. Oxygen is used in photosynthesis. (Easy)

49. Plants prepare their food in sunlight. (Easy)

VI. Answer the following questions in one word or one sentence:

50. Which gas do plants use to prepare food? (Easy)

51. Write the byproduct in photosynthesis. (Easy)

52. Cuscuta is a green plant – State True or False. (Easy)

53. What type of plant is a pitcher plant? (Easy)

54. What is symbiosis? (Average)

55. What is saprotrophic nutrition? (Average)

56. Give examples of insectivorous plants. (Easy)

57. How does nutrition occur in lichens? (Difficult)

58. Which bacteria helps in plants help to nitrogen absorption? (Easy)

59. Why are algae green in colour? (Easy)

VII. Answer the following questions in two-three sentences (Short Answer – 2 Marks):

60. What is photosynthesis? (Average)

61. What is the role of chlorophyll? (Average)

62. Why is Cuscuta parasitic? (Average)

63. Explain the term 'chlorophyll'. (Average)

64. Mention four elements required for photosynthesis. (Average)

65. Explain why plants are called 'autotrophic' organisms. (Average)

66. Why does Cuscuta not have a green colour? (Average)

VIII. Answer the following questions in three-four sentences (Brief Answer – 3 Marks):

67. List the elements required and products of photosynthesis. (Average)

68. Write the differences between autotrophic and heterotrophic plants. (Average)

69. Some plants survive even without being green. How is this possible? Explain with an example. (Difficult)

70. Explain the role of light in photosynthesis. (Average)

IX. Answer the following questions in four-five sentences (Short Essay – 4 Marks):

71. Explain the process of photosynthesis. (Average)

72. Explain about nutrition in pitcher plants. (Difficult)

73. Cuscuta is a parasitic plant justify. (Difficult)

74. Scientifically explain the role of light in photosynthesis. (Difficult)

75. Explain with an example, how insectivorous plants obtain their nutrition. (Difficult)

X. Answer the following questions: Five Marks Questions:

76. Explain the process of photosynthesis with a diagram. (Difficult)

77. What would be the effect on Earth's organisms if photosynthesis did not occur? (Difficult)

78. If you were a pitcher plant, how would your life cycle be? Explain. (Difficult)

79. Clarify the statement: "Plants are food producers and protectors of the environment." (Difficult)

80. Human life depends on photosynthesis. Justify (Difficult)

Unit-2: Nutrition in Animals

Learning Outcomes:

- Explain the stages of nutrition in animals.
- Explain digestion in humans.
- Explain digestion in ruminant animals.
- Understand the mode of nutrition in unicellular organisms like Amoeba.

I. Choose the correct answer from the four options provided for each of the following:

1. Nutrition in animals involves these factors:
 - A. Nutrient requirements
 - B. Mode of intake
 - C. Its utilization in the body
 - D. All of the above(Easy)
2. Omnivorous animals obtain their food by eating this type animals.
 - A. Carnivorous
 - B. Herbivorous
 - C. Omnivorous
 - D. All of the above(Easy)
3. The following food components are complex substances:
 - A. Carbohydrates
 - B. Lipids
 - C. Vitamins
 - D. Minerals(Easy)
4. The body part where digestion of all food components is completed:
 - A. Small intestine
 - B. Large intestine
 - C. Stomach
 - D. Liver(Easy)
5. The largest gland in our body is:
 - A. Stomach
 - B. Heart
 - C. Liver
 - D. Brain(Easy)
6. i. Digestion/ ii. Assimilation/ iii. Ingestion/ iv. Egestion/ v. Absorption. The sequential stages of nutrition among these are:
 - A. i, ii, iii, iv, v
 - B. iii, i, ii, v, iv
 - C. iii, i, v, ii, iv
 - D. iii, ii, i, v, iv
7. The part of the digestive system where ruminant animals store ingested food is:
 - A. Villi
 - B. Oesophagus
 - C. Rumen
 - D. Mouth(Easy)

8. The part that helps in Amoeba, in movement and capturing food is:
 - A. Pseudopodia
 - B. Vacuole
 - C. Nucleus
 - D. Mitochondria (Easy)
9. We cannot digest grass. The reason is due to the presence of:
 - A. Sucrose
 - B. Glucose
 - C. Fructose
 - D. Cellulose
10. The main Function of the villi in the small intestine is---
 - A. Absorption
 - B. Ingestion
 - C. Egestion
 - D. Digestion (Easy)
11. Acid in our stomach
 - A. Protects the inner lining of the stomach from harmful substances.
 - B. Kills many harmful bacteria present with food in the stomach.
 - C. Absorbs food in the stomach.
 - D. Digests the protein in the stomach.
12. The inner wall of the small intestine contains thousands of finger-like outgrowths. These are called
 - A. villi
 - B. the intestine
 - C. Stomach
 - D. blood vessels (Easy)
13. Teeth that fall out between 6 to 8 years of age are
 - A. Permanent teeth
 - B. milk teeth
 - C. Jaw teeth
 - D. Canines
14. The stomach releases hydrochloric acid and -----juices that reacts with food.
 - A. Digestive
 - B. Bile
 - C. oxygen
 - D. Carbon (Easy)
15. The part of the Amoeba that digests its food
 - A. cytoplasm
 - B. vacuole
 - C. cell membrane
 - D. Nucleus (Easy)
16. Living beings that get food made from plants are
 - A. heterotrophs
 - B. autotrophs
 - C. Self-sustaining nutrition
 - D. guard cell (Easy)

17. The largest gland in the human body is

- A. pancreas
- B. the liver
- C. Stomach
- D. the brain

(Easy)

18. Match the following factors :

- | | |
|------------------|------------------------------|
| 1. Energy | i. Amino acids |
| 2. Carbohydrates | ii. Sugar |
| 3. Proteins | iii. Fatty acid and glycerol |
| 4. Fat | iv. Product of respiration |

- A. 1-i, 2-ii, 3-iii, 4-iv
- B. 1-ii, 2-iii, 3-i, 4-iv
- C. 1-iv, 2-ii, 3-iii, 4-i
- D. 1-iv, 2-ii, 3-i, 4-iii

19. Bile juice produced in

- A. the brain
- B. the heart
- C. the liver
- D. the mouth

(Easy)

20. Match, which part of the digestive part is involved.

- | | |
|-------------------------------|-----------------------|
| 1. Absorption of food | i. the teeth |
| 2. Chewing food | ii. small intestine |
| 3. Killing bacteria | iii. large intestine |
| 4. Complete digestion of food | iv. Hydrochloric acid |
| 5. Faecal matter production | v. small intestine |

- A. 1-i, 2-ii, 3-iii, 4-iv, 5-v,
- B. 1-v, 2-i, 3-iv, 4-ii, 5-iii,
- C. 1-iii, 2-i, 3-ii, 4-iv, 5-v,
- D. 1-ii, 2-v, 3-i, 4-iii, 5-iv (Difficult)

21. Undigested food is stored here.

- A. large intestine
- B. Rectum
- C. small intestine
- D. Stomach

(Easy)

22. Digestion is completed at

- A. large intestine
- B. liver
- C. Stomach
- D. small intestine

(Easy)

23. Organ that absorbs water in digestion is

- A. Stomach
- B. liver
- C. large intestine
- D. small intestine

(Easy)

24. A body organ that produces bile juice is
 A. Stomach
 B. the heart
 C. liver
 D. the brain (Easy)
25. The unicellular organisms present in the cecum of ruminant animals are
 A. Amoeba
 B. Euglena
 C. Bacteria
 D. Paramecium
26. State True/False.
 A. Digestion of starch begins in the stomach. (Easy)
 B. The tongue helps to mix food with saliva. (Easy)
 C. Ruminant animals bring back the swallowed grass to their mouth and chew it for some time.
 D. The gallbladder temporarily holds bile. (Easy)
27. Write the appropriate word for the given sentence.
 A. Fat is completely digested here. (Easy)
 B. Water is mainly absorbed from undigested food here.

II. Answer the following questions in one word or one sentence: (One Mark Questions)

28. What are herbivores? (Easy)
 29. What are carnivores? (Easy)
 30. Is a rabbit a herbivore? Explain. (Average)
 31. What is digestion? (Easy)
 32. Name any two insects that suck nectar from plant flowers. (Average)
 33. What kind of food does a hummingbird consume? (Average)
 34. What is ingestion? (Easy)
 35. Give an example for an omnivore. (Easy)
 36. Is a bear an omnivore? Why? (Easy)
 37. What are the main stages of human nutrition? (Average)
 38. Which gland secretes saliva? (Easy)
 39. What are the four types of teeth? (Easy)
 40. Which is the largest gland in the human body? (Easy)
 41. What is the J-shaped bag-like structure or part in the digestive system? (Average)
 42. Explain the meaning of absorption. (Easy)
 43. What is the name of the enzyme secreted in the liver? (Average)
 44. What is the name of the part that plays a major role in fat digestion? (Average)
 45. What are villi? (Average)
 46. What is the main part of the digestive system where fats are completely digested? (Average)
 47. What is the name of the acid secreted by the human stomach? (Easy)
 48. What are the lengths of human small intestine and large intestine? (Average)
 49. What is the length of the food pipe (Oesophagus)? (Average)
 50. What is the main function of the food pipe (Oesophagus)? (Easy)

51. What is Egestion? (Easy)
52. Which is the reddish-brown gland in the body? (Average)
53. What is another name for grass-eating animals? (Easy)
54. What is the name of the special part of the digestive system in grass eating animals?(Easy)
55. Which animals are called as ruminants? Give examples. (Easy)
56. What is the bag-like structure between the small intestine and large intestine in ruminants? (Easy)
57. Can cellulose be digested by humans? Why? (Easy)
58. What is a microorganism? (Easy)
59. What are unicellular organisms? (Easy)
60. Where is food digested in Amoeba? (Easy)
61. Girish suddenly gets hiccups while eating food in a hurry. How can you justify? (Average)
62. What is a microscope? (Easy)

III. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

63. What is nutrition in animals? State its two main purposes. (Average)
64. What is digestion? What are the main stages of digestion in animals? (Difficult)
65. What is rumination? Where is food stored in these types of animals? (Average)
66. What is the function of the tongue? (Easy)
67. What are the various organs involved in digestion? (Average)
68. What is the function of villi? Explain. (Average)
69. Digestion converts food components into simpler products. Name those food components. (Difficult)
70. Draw a diagram of Amoeba and label two parts. (Easy)
71. Name these:
 - A. Unicellular microorganism (Easy)
 - B. Ruminant animal (Easy)
 - C. Locomotory organ of Amoeba (Easy)
 - D. A type of carbohydrate in grass (Average)
 - E. Chewing food (Easy)
 - F. Detecting different tastes in food (Easy)
 - G. Helps to kill bacteria in food (Average)
 - H. Secretes bile juice (Easy)
 - I. Helps in absorbing nutrients in the small intestine (Average)
 - J. Helps in egestion (Easy)

IV. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

72. Which part of the digestive system is involved in the process of absorption? (Difficult)
73. Draw diagrams of the four types of teeth and label them. (Difficult)
74. Draw a neat diagram of the human digestive system and label its parts. (Difficult)
75. Draw a diagram of the digestive system in ruminant animals. (Difficult)
76. Draw a flow chart of the stages of human nutrition.
Ingestion, Digestion, Absorption , Assimilation , Egestion
(Difficult)

Unit - 3

Heat

Learning Outcomes:

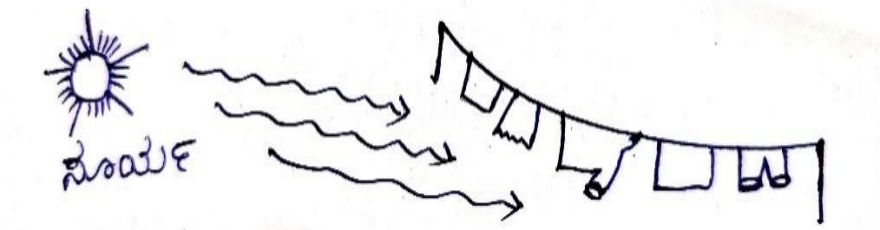
- 1: Know the difference between heat and temperature.
- 2: Identifying methods of heat transferring in objects.
- 3: Applying the uses of various thermometers.

I. For each of the following, four options are provided; choose and write the correct one:

1. An iron ball of 50°C is placed in a container of water of temperature 25°C . Then it's heat
 - A. flows from an iron ball to water.
 - B. cannot flow from iron ball, nor water
 - C. flows from water to an iron ball.
 - D. The temperature of both increases. (Easy)
2. Stainless steel pans are usually copper-bottomed or coat plated, because
 - A. The copper base makes the pan more durable.
 - B. Such pans are made to look attractive in colour.
 - C. Copper is a better conductor than stainless steel.
 - D. Copper is easier to clean than stainless steel. (Average)
3. The reason for using light coloured clothes more in summer season is
 - A. Coloured fabrics absorb more heat than plain fabrics.
 - B. Coloured fabrics absorb less heat than coloured fabrics.
 - C. Coloured clothes absorb the same amount of heat as plain clothes.
 - D. None of the above. (Average)
4. A measure of the temperature level of a substance is
 - A. temperature
 - B. Density
 - C. calorie
 - D. weight (Easy)
5. An instrument used to measure the temperature of boiling water
 - A. Clinical thermometer
 - B. Laboratory thermometer
 - C. Weather thermometer
 - D. Not at all (Easy)
6. Rahim and Raju check their body temperature with a thermometer and find it to be 98.6°F and 37°C respectively. In this context
 - A. Rahim's body temperature is greater than Raju's.
 - B. Raju's body temperature is greater than Rahim's.
 - C. Body temperature of both is equal.
 - D. The body temperature of both is not equal. (Average)
7. Generally heat flows from a hotter object to an object of
 - A. Equivalent temperature
 - B. overheating
 - C. low temperature
 - D. Not at all (Easy)

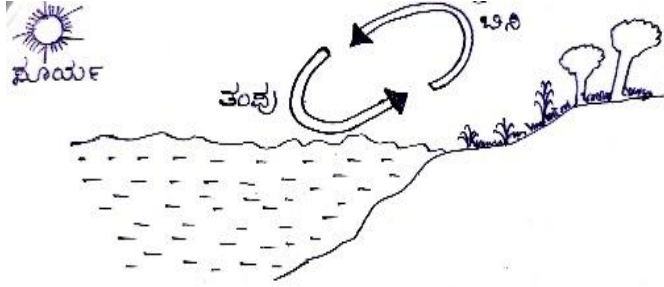
8. Which of the following is the poor conductor of heat?
 - A. cooking oil
 - B. Iron rod
 - C. water
 - D. Copper wire (Easy)
9. Recently, glass, plaster of paris (POP), concrete, cement are used more for building houses. The reason is
 - A. To make the house strong
 - B. To decorate the house
 - C. To protect the house from fire accidents
 - D. To reduce manufacturing cost (Average)
10. Reason for making ventilation system in very tall buildings
 - A. For decoration
 - B. Only For light
 - C. To keep the building cool
 - D. None of the above (Easy)
11. Which of the following is not a method of heat conduction?
 - A. Conduction
 - B. convection
 - C. radiation
 - D. expansion (Easy)
12. The slow cooling of the pan when removed from the fire flame is due to
 - A. Heat transfer from the pan to the surrounding area
 - B. Heat transfer from the surrounding area to the pan
 - C. Absence of heat transfer
 - D. Not at all (Average)
13. Placing a plastic or wooden handle on a metal pan is
 - A. Helpful to Hold
 - B. For Long life
 - C. To gain weight
 - D. The heat of the pan should not hurt the hands (Average)
14. The silencer of two-wheelers is heated due to which of the following methods?
 - A. convection
 - B. conduction
 - C. radiation
 - D. light effect (Average)
15. Material that allow heat to flow easily through
 - A. Brick
 - B. A piece of wood
 - C. the glass
 - D. Aluminium (Easy)
16. In coastal areas, the windows of the house face opposite to the sea, because
 - A. Adequate access to natural light
 - B. To let in the sea breeze
 - C. Wind coming in from the land side
 - D. To reduce home manufacturing cost (Average)

17. The sea breeze means
- Wind over the sea
 - A wind blowing from the sea towards land
 - A wind that blows from land to sea
 - Wind on Earth
- (Average)
18. The reason to sea breeze blowing during the day time is
- The wind is strong during the day
 - Temperature rises during the day
 - The earth heats up faster than the sea
 - The sea heats up faster than the land
- (Average)
19. The method by which solar heat reaches the Earth is
- Conduction
 - convection
 - radiation
 - Not at all
- (Easy)
20. The method, liquids are usually heated is
- Conduction
 - Convection
 - radiation
 - Not at all
- (Easy)
21. Identify the mode of heat transfer in the given figure



- Conduction
 - Convection
 - radiation
 - Evaporation
- (Difficult)
22. A type of heat conduction that occurs when there is no medium between two objects
- Conduction
 - Convection
 - radiation
 - All of the above
- (Easy)
23. The top of the flame of a burning candle is very hot, because
- Upward thermal convection
 - Downward convection
 - heat conduction
 - radiation
- (Easy)

24. Identify the mode of heat transfer in the given figure



- A. Conduction
- B. Convection
- C. radiation
- D. Not at all (Average)

25. Recently houses are built with hollow bricks

- A. Available at low prices
- B. Hollow bricks keep the house cool
- C. To reduce consumption of cement
- D. To save time (Average)

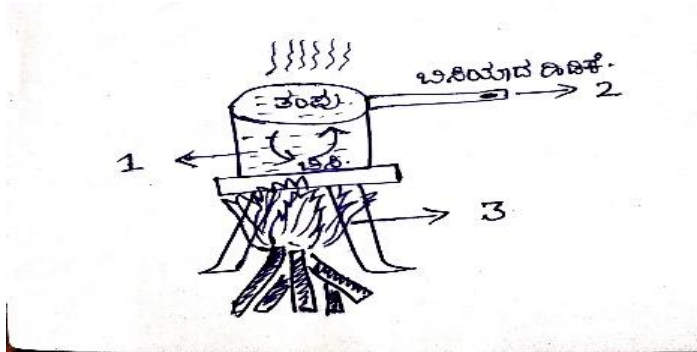
26. The surface of the aeroplanes is made up of white paint, because

- A. To keep the aeroplanes warm
- B. White colour to reflect sunlight and keep cool
- C. Colour lasts longer
- D. To reduce manufacturing cost (Average)

27. Reason for wearing woollen clothes in winter

- A. Wool is cheap.
- B. Wool keeps the body warm
- C. Wool keeps the body cool
- D. All of the above (Average)

28. Find the correct option for the numbers in the given picture.



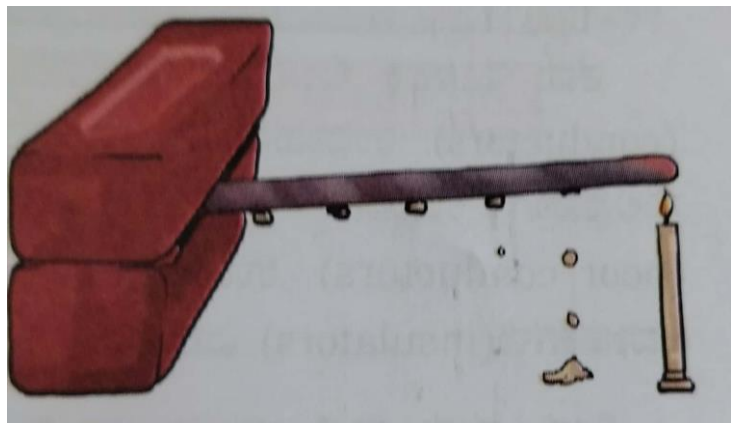
- A. 1-Conduction 2- Convection, 3-Radiation
- B. 1-Radiation, 2- Convection, 3-Conduction
- C. 1- Convection, 2-Conduction, 3-Radiation
- D. 1- Convection, 2-Conduction, 3-Conduction (Average)

29. To know the object is hot by

- A. touching
- B. thermometer
- C. accelerometer
- D. the telescope (Easy)

30. A device used to measure the patient's body temperature
- Laboratory thermometer
 - Clinical thermometer
 - Weather thermometer
 - Not at all (Easy)
31. Measuring range in a clinical thermometer is
- 35°C to 40°C
 - 35°C to 44°C
 - 36°C to 45°C
 - 35°C to 42°C (Average)
32. Normal human body temperature is
- | | | | | |
|---------|---------|----------|---------|--------|
| A. 37°C | B. 98°C | C. 100°C | D. 32°C | (Easy) |
|---------|---------|----------|---------|--------|
33. Temperature range in a laboratory thermometer is
- 35°C to 42°C
 - 10°C to 110°C
 - 10°C to 100°C
 - 10°C to 110°C (Average)
34. A chemical indicator used in a thermometer is
- Chlorine
 - mercury
 - Hydrogen
 - Sulphur (Easy)
35. Generally the most used material for making thermometers is
- Plastic
 - Metal
 - Glass
 - Wood (Easy)
36. The most commonly used thermometer scale type in India is
- Degree Celsius
 - Degree Fahrenheit heat
 - Kelvin
 - Volt (Easy)
37. The Celsius and Fahrenheit scales are equal at the temperature
- 0°
 - 10°
 - 40°
 - 40° (Easy)
38. 0°C on the Celsius scale is equal to this measure on the Fahrenheit scale
- 10°F
 - 20°F
 - 23°F
 - 32°F (Easy)

39. A chemical used in laboratory thermometers is
 A. Water
 B. Mercury
 C. Alcohol
 D. Chlorine (Easy)
40. The following is an example of heat radiation
 A. Melting of butter
 B. Pan heating up on a stove
 C. Heat coming from the sun
 D. Change in water temperature (Average)
41. The medium in which heat conduction is observed:
 A. Metal B. Air C. Wood D. Plastic (Easy)
42. The following device can measure body temperature.
 A. Weighing scale B. Thermometer C. Valuation scale D. Measuring tape (Easy)
43. Heat sensation primarily occurs through this organ
 A. Ear B. Eye C. Skin D. Nose (Easy)
44. The method of heat transfer process in this image is:



- A. Convection B. Conduction C. Radiation D. None of the above (Average)

II. Match the column A with the column B: (Average)

45.

A

1. Silver
2. Wood
3. Thermometer
4. Temperature

B

- A. Heat Insulator
- B. Shows the hotness of an object
- C. Best Heat Conductor
- D. Shows body temperature

46.

A

1. Heat Conduction
2. Heat Convection
3. Heat Radiation
4. Heat Convection

B

- A. Heat propagation in air
- B. Heat propagation in solids
- C. Heat propagation through hot air
- D. Heat propagation through energy transformation

III. Fill in the blanks with the correct answers:

47. The unit of temperature is _____. (Easy)
48. The measure of the hotness of an object is called _____. (Easy)
49. The device used to measure temperature is called a _____. (Easy)
50. The process by which heat flows from a region of higher density to a region of lower density is _____. (Easy)
51. The method of heat transfer from sun to earth is _____. (Easy)
52. The method of heat transfer in liquids is called _____. (Easy)
53. The cool air from the land moves towards the sea is called as _____. (Average)
54. The element with the highest thermal conductivity is _____. (Easy)

IV. Write True or False for the following statements:

55. Heat always transfers from a region of lower temperature to a region of higher temperature. (Average)
56. Wood is a good insulator of heat. (Easy)
57. A medium is required for heat radiation. (Easy)
58. The thermometer used by doctors is also a laboratory thermometer. (Average)

V. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

59. List the three modes of heat transfer. (Easy)
60. A steel cup filled with hot tea stays hot longer, but a paper cup does not. Why? (Average)
61. A clinical thermometer cannot be used in a laboratory. Why? (Average)
62. State two differences between a laboratory thermometer and a clinical thermometer. (Average)
63. In hot climates, it is advisable to paint the outer walls of houses white. Explain. (Average)

VI. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

64. Explain the parts of a thermometer. (Average)
65. Explain the method of measuring body temperature. (Average)

VII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

66. Explain the three methods of heat transfer with examples. (Average)
67. Explain the characteristics of a good heat conductor and a heat insulator. (Average)

VIII. Answer the following questions: Five mark questions (Long Answer – 5 Marks)

68. Explain the difference between heat and temperature. Give everyday examples for each. (Difficult)
69. List the differences between heat conduction, convection, and radiation. (Difficult)

Unit - 4.
Acids, Bases and Salts

Learning Outcome:

- 1: To know the difference between acids and bases.
2. Listing the applications of neutralization in daily life.
3. Understanding the meaning of acids and bases.
4. Giving examples of acids, bases, and salts.
5. Learning to identify changes in indicators.
6. Learning about acid-base reactions (Neutralization).
7. Knowing the daily uses of acids and bases.

I. For each of the following, four options are provided; choose and write the correct one:

1. Blue litmus paper turns red in
 - A. Sodium bicarbonate solution
 - B. Calcium hydroxide solution
 - C. Potassium hydroxide solution
 - D. Hydrochloric acid(Difficult)
2. Litmus is obtained from
 - A. lichens
 - B. chrysanthemum
 - C. Marigold
 - D. lotus flower(Easy)
3. The taste of Base is
 - A. Sour
 - B. bitter
 - C. sweet
 - D. salt(Easy)
4. Identify the chemical indicator
 - A. Turmeric
 - B. Litmus paper
 - C. Phenolphthalein
 - D. Hibiscus flower(Easy)
5. A substance containing acetic acid is
 - A. Spinach
 - B. curd
 - C. Vinegar
 - D. Mango(Easy)
6. Base used in soap is
 - A. Sodium hydroxide
 - B. Potassium hydroxide
 - C. Both a and b
 - D. None of the above(Average)

7. The colour change when china rose indicator is added to acid and base respectively are
 A. Red and green
 B. Dark pink and green
 C. Green and blue
 D. Green and white (Difficult)
8. Identify the word that does not belong to the group
 A. Acetic acid
 B. Citric acid
 C. Lactic acid
 D. Hydrochloric acid (Average)
9. Match the following
- | | |
|--------------------|--------------|
| a. Baking Soda | 1. indicator |
| b. Vinegar | 2. salt |
| c. Salt | 3. Acid |
| d. Phenolphthalein | 4. base |
- A. a-3, b-4, c-2, d-1
 B. a-4, b-3, c-2, d-1
 C. a-3, b-4, c-1, d-2
 D. a-4, b-3, c-1, d-2 (Difficult)
10. Mark the correct statement
 A. Milk of magnesium is a base
 B. Sugar is an indicator
 C. Shampoo is an example of an acid
 D. Cooking salt is a base (Average)
11. Chemical Name of Baking Soda is
 A. Sodium carbonate
 B. Sodium Bisulphate
 C. Sodium bicarbonate
 D. Sodium chloride (Average)
12. Sodium hydroxide and hydrochloric acid are react each other, produce
 A. Salt and water
 B. Salt and hydrogen
 C. acid and water
 D. bases (Average)
13. The substance give a colour change when the turmeric indicator used is
 A. Sugar solution
 B. Vinegar
 C. Salt solution
 D. Soap solution (Difficult)
14. Identify the false statement:
 Care must be taken when using acid and base in the laboratory. Because,
 A. They have antioxidant properties.
 B. Causes inflammation.
 C. Harms to skin
 D. They have crystallizing properties. (Average)

15. Complete the equation. $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{---}$
- H_2O
 - H_2
 - O_2
 - H_2O_2
- (Easy)
16. Abundant vitamin in gooseberry is
- Vitamin A
 - Vitamin C
 - Vitamin D
 - Vitamin E
- (Easy)
17. Acid rain means
- Rainwater becomes acidic
 - Rainwater becomes basic
 - Sulphuric acid and carbonic acid are high in rainwater
 - Citric acid and acetic acid are high in rainwater
- 1, 2 and 3
 - 1 and 2 only
 - 1, 3 and 4
 - 1 and 3 only
- (Average)
18. Ammonium hydroxide is used in which of the following?
- Soap
 - Window cleaner
 - Vinegar
 - detergent
- (Easy)
19. A substance used to neutralize wastes in a factory
- salt
 - Vinegar
 - slaked lime
 - water
- (Easy)
20. A common solution for ant bites
- Baking soda solution
 - Calamine solution
 - Both a and b can be used
 - Not at all
- (Easy)
21. Due to excessive use of fertilizers in soil results
- Acidity increases.
 - Increases the basic nature.
 - Both increase.
 - Acidity decreases.
- (Average)
22. When red litmus paper is dipped in lime
- Turns blue.
 - The colour does not change.
 - Turns red.
 - White in colour.
- (Average)

23. The reaction occurs when specific amounts of hydrochloric acid and magnesium hydroxide are added:
 A. product
 B. Neutralization
 C. Evaporation
 D. Crystallization (Average)
24. Which of the following acid causes inflammation from an ant bite?
 A. Citric acid
 B. Tartaric acid
 C. Oxalic acid
 D. Formic acid (Average)
25. If litmus paper is put in an acid, what colour does it change to?
 A. Blue B. Red C. Yellow D. Green (Easy)
26. If a turmeric indicator is in a base, the colour change is:
 A. Red B. Black C. Green D. Blue (Easy)
27. A salt is formed by this process:
 A. Acid + Acid B. Base + Base C. Acid + Base D. Water combination (Average)
28. The base among these:
 A. Hydrochloric acid B. Lemon juice C. Soda lime D. Acetic acid (Average)
29. The natural indicator among these:
 A. Litmus B. Methyl Orange C. Phenolphthalein D. Bromothymol Blue (Average)
30. The bases contains:
 A. OH^- B. H^+ C. Cl^- D. Na^+ (Easy)
31. This is not a natural indicator:
 A. Litmus B. Turmeric C. China rose D. Fruit juice (Easy)
32. The type of heat generated in a neutralization reaction:
 A. No heat change B. Cooling C. Heat absorption D. Heat release (Average)

II. Fill in the blanks with the correct answers:

33. The main acid found in lemon juice is _____. (Easy)
34. Litmus is a _____ indicator. (Easy)
35. Soda lime is a _____. (Average)
36. The acid present in tamarind is _____ acid. (Easy)
37. The combination of an acid and a base produces _____ (Easy)
38. Litmus is obtained from _____. (Easy)
39. When turmeric is applied to lemon juice, the colour changes to _____. (Easy)
40. The salt present in common salt is _____. (Easy)
41. Litmus paper turns _____ in lemon juice. (Average)
42. Amla (Indian gooseberry) is rich in vitamin _____. (Easy)

III. Match the column A with the column B: (Difficult)

43.

A	B
1. Hydrochloric acid	i. Base
2. Soda lime	ii. Acid + Base
3. Turmeric	iii. Digestion of food
4. Salt	iv. Natural indicator

44.

A	B
1. Litmus	i. Yellow indicator
2. Hydroxide	ii. Natural indicator
3. Turmeric	iii. Lemon juice
4. Salt	iv. Base
5. Acetic acid	v. Neutralization

45.

A	B
1. Phenolphthalein	i. Lemon juice
2. Lichens	ii. Salt + Water
3. Acetic acid	iii. Source of litmus
4. Sodium hydroxide	iv. Man-made indicator
5. Neutralization reaction	v. Base

IV. State True/False, and if false, correct the statement:

46. Tap water has an acidic nature. (Easy)
47. We should take antacids when suffering from acidity. (Average)
48. Neutralization is a reaction between an acid and a neutral substance. (Average)
49. Limewater turns blue litmus paper red. (Average)
50. Turmeric is a chemical indicator. (Easy)
51. Common salt is a base. (Easy)
52. Acid rain means rainwater has a high concentration of citric acid. (Average)
53. Curd contains acetic acid. (Easy)
54. Excessive use of fertilizers reduces the acidity of the soil. (Average)
55. Carbonic acid can be used as a source of Vitamin C. (Easy)

V. Answer the following questions in one word or one sentence:

56. What colour is the turmeric indicator? (Easy)
57. What is the chemical formula of hydrochloric acid? (Easy)
58. What type of substance is lemon juice? (Easy)
59. Give one example of a salt. (Easy)
60. Which is the source of litmus? (Easy)
61. If a substance has a hydroxyl ion group, is it an acid or a base? (Easy)
62. Name the acid present in vinegar. (Average)
63. What is the chemical name of bleaching powder? (Average)
64. Name the base present in limewater. (Easy)

VI. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

65. How is salt formed?(Average)
66. What is an indicator? Write two examples.(Average)
67. Write the difference between acids and bases.(Average)
68. Write the names of two natural indicators. (Easy)
69. Turmeric indicator changes colour when added to soap – why? (Average)
70. Adding acid gradually to water is safe – why? (Average)
71. Turmeric colour changes in a base – why? (Average)
72. Litmus turns red when put it in an acidic solution – why? (Average)
73. Heat is produced in a neutralization reaction – why? (Average)
74. Turmeric is a natural indicator – how? (Average)
75. Why common salt is called as a salt? (Average)
76. Separate the following substances into acids and bases: (Average)
Lemon juice, baking soda, orange juice, curd, vinegar, soap solution.
77. Observe the following pictures and classify them as acids or bases based on their nature. (Average)



Vinegar



Baking Soda



Distilled Water



Lemon Juice



Borax



Soda

78. What is acid rain? (Average)
79. How would you check if distilled water is acidic/basic/neutral?(Difficult)
80. Many household products like window cleaners contain ammonia. How would you determine if its property is acidic or basic? (Difficult)
81. Name the acid present in the following: i. Lemon juice ii. Curd iii. Tamarind iv. Spinach(Average)

82. Name the acids used in the following activities: i. Eye wash ii. Carbonated beverages(Average)

83. Write the chemical name: i. Salt ii. Baking soda (Easy)

84. Lemon juice tastes sour, while limewater is bitter. Why? (Average)

85. Name the base used in the following: (Average)

(i) To remove grease stains from clothes _____, (ii) Antacid _____

86. Name two air pollutants that cause acid rain. (Average)

VII. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

87. Write the difference between natural and man-made indicators. (Difficult)

88. Define neutralization reaction and give an example. (Difficult)

89. Describe the colour changes of the phenolphthalein indicator. (Difficult)

90. Why do you take an antacid tablet when you suffer from acidity? (Difficult)

91. Calamine solution is applied to the skin when an ant bites. Why? (Difficult)

92. Why should factory waste be neutralized before disposal? (Difficult)

VIII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

93. Write the differences between acids and bases. (Difficult)

94. Explain acids and bases with examples of their use in the body or at home. (Difficult)

95. State the purpose and daily uses of salts. (Average)

96. Describe an activity about natural indicators. (Difficult)

97. Explain the process of salt formation and its uses. (Difficult)

98. Explain the use of neutralization in daily life. A. Toothpaste B. Ant bite treatment

99. Observe the picture below. Solutions A, B, C, and D are given. Indicate what colour red litmus paper will turn when dipped in the following solutions and explain the nature of the solution. (Difficult)



A



B



C



D

Milk in water

Baking powder in water

Vinegar in water

Glucose in water

IX. Answer the following questions: 5 mark questions (Long Answer – 5 Marks)

100. Explain the uses and harmful effects of acids, bases, and salts. (Difficult)

101. Write an equation for a neutralization reaction and explain it. (Difficult)

102. Briefly explain "Acids, Bases, and Indicators." (Difficult)

Unit - 5.
Physical and Chemical changes

Learning Outcomes:

- 1: Recognize physical and chemical changes.
2. Differentiate between physical change and chemical change.
3. Understand instances of rusting in daily life.

I. For each of the following, four options are provided; choose and write the correct one:

1. Sugar is dissolved in water. Then that is an example of :
A. chemical change
B. Physical change
C. neutral
D. Biological change (Easy)
2. Identify the word that does not belongs to the group.
A. Food digestion
B. Wine is fermentation
C. Fruit ripening
D. Melting ice (Average)
3. The agricultural implements used by a farmer for farming such as shovels and spades are rusted. This is an example of :
A. Physical change
B. chemical change
C. both Physical and chemical change
D. Not at all (Easy)
4. Identify the false statement among these regarding physical change.
A. A new substance is produced.
B. Reversible.
C. Changes in shape, size, colour.
D. There will be a change in state. (Average)
5. An example for physical change is:
A. Cutting the thread into pieces.
B. Ice melts into water.
C. Grinding chalk.
D. All of the above. (Easy)
6. An example of a chemical change is
A. Magnesium burns
B. Bursting of firecrackers
C. Photosynthesis
D. All of the above (Average)
7. Compost formation from leaves is an example of :
A. Physical change
B. chemical change
C. Biological change
D. None of the above (Easy)

8. A salt that gives a white colour when carbon dioxide is mixed with slaked lime.
 A. Calcium carbonate
 B. Calcium sulphate
 C. Potassium carbonate
 D. Calcium (Average)
9. When the liquid fuel in the LPG cylinder turns to gas is example for
 A. chemical change
 B. Physical change
 C. Change of position
 D. Status change (Average)
10. Choose the correct option:
 1. Corrosion of iron i. Absorption of ultraviolet rays
 2. Chopped apple ii. Light, noise, gas production
 3. Burst of fireworks iii. Colour change
 4. Ozone layer iv. A slow process
 A. 1-iv, 2-ii, 3-iii, 4-I B. 1- ii, 2- i, 3- iii, 4- iv
 C. A-iv, 2-iii, 3-ii, 4-I D. 1- i, 2- ii, 3- iv, 4- iii (Average)
11. Chemical formula of ferrous oxide is
 A. Fe_2O_3 B. FeO C. Fe_3O_2 D. Fe_2O (Average)
12. The following statement/s is/are correct when a candle burns?
 Statement-1: Wax melts and solidifies again when cooled is a physical change.
 Statement-2: Combustion of wax releases new products like CO_2 and water vapour as a chemical change.
 A. Only statement 1 is correct
 B. Statement 2 is correct
 C. Statement 1 and 2 are correct
 D. Both the statements are wrong (Difficult)
13. salt is obtained from sea water by the method of
 A. Crystallization
 B. Evaporation
 C. Dehydration
 D. Sublimation (Average)
14. A gas released when acetic acid reacts with baking soda
 A. Oxygen
 B. Carbon dioxide
 C. Hydrogen
 D. Carbon (Average)
15. Components of Stainless steel are
 A. Carbon, Nickel
 B. Carbon, Chromium
 C. Iron, Carbon, Chromium, Nickel
 D. None of the above (Average)

16. Measures taken to prevent rusting is
- A. To keep in dry air
 - B. To keep in water
 - C. Painting, greasing
 - D. To keep in moist air
- (Easy)
17. Iron objects rust slowly in the desert. because,
- A. Air humidity is low in deserts.
 - B. Desert air has high humidity.
 - C. Deserts have less rainfall.
 - D. It rains more in the desert.
- (Average)
18. A new substance which forms a brown deposit on iron when iron reacts with blue coloured salt solution.
- A. Sulphate
 - B. Copper
 - C. iron
 - D. Sulphur
- (Difficult)
19. Some Iron parts of the ship will need to be replaced every year. Because
- i. Make the ship look like new
 - ii. The surface of the ship gets corroded by sea water.
 - iii. Salts in the sea accelerate corrosion.
 - iv. The surface of the ship is not painted
- A. Only i
 - B. ii and iii
 - C. i and iv
 - D. ii and iv
- (Difficult)
20. Methods to prevent corrosion are:
- A. Painting
 - B. Galvanizing
 - C. Applying a layer of grease
 - D. All of the above
- (Average)
21. A new substance is obtained in:
- A. Physical change
 - B. Chemical change
 - C. Melting
 - D. Evaporation
- (Average)
22. Which of these is NOT a physical change?
- A. Burning paper
 - B. Fruit rotting and smelling
 - C. Freezing water into ice
 - D. Burning sugarcane straw.
- (Average)
23. A metal burns with a brilliant white light is:
- A. Aluminium
 - B. Magnesium
 - C. Zinc
 - D. Mercury
- (Average)

24. Rotting of fruit is an example of :
A. Physical change
B. Heat change
C. Chemical change
D. Temporary change (Easy)
25. Evaporating water is:
A. Chemical change
B. Heat change
C. Physical change
D. Liquefaction (Average)
26. The change in colour is a characteristic of:
A. Physical change
B. Heat change
C. Chemical change
D. None of the above (Easy)
27. Composition of Iron, Carbon, Chromium, and Nickel is :
A. Bronze
B. Brass
C. Stainless steel
D. German Silver (Average)
28. Ravi collects all the leaves that have fallen in his garden. After a few days, all the leaves have rotted and turned into compost. This is an example of :
A. Thermal change
B. Chemical change
C. Physical change
D. Heat Change (Average)
29. The new substance is released when magnesium reacts with oxygen?
A. Magnesium Sulphate
B. Magnesium Oxide
C. Magnesium Carbonate
D. None of the above (Average)
30. Raju saw an LPG gas pipeline installed on the village road. Even though it has been buried underground for many years, the colour of the pipeline has not changed. The reason is:
A. The pipeline was galvanized.
B. The pipeline was constantly exposed to water.
C. The pipeline was made of strong materials.
D. The pipeline was covered with rubber. (Average)

31. Consider the following statements:
- New substances are not formed in physical changes.
 - Digestion of consumed food is a physical change.
 - New substances are formed in chemical changes.
 - Cutting a thread into pieces is a chemical change.

The correct statement/s is/are:

- Only i is correct.
- Only ii is correct.
- Only i and iii are correct.
- All statements are correct. (Difficult)

II. Fill in the blanks with the correct answers:

32. Converting water into ice is a _____ change. (Easy)
33. _____ changes can produce or absorb heat. (Easy)
34. When liquid copper is cooled, it turns into a solid state. This is a _____ change. (Easy)
35. Salt dissolving in water is a _____ change. (Easy)

III. Match the column A with the column B: (Average)

36.

A	B
i. Ice turning into water	1. Physical Change
ii. Burning paper	2. Chemical Change
iii. Salt dissolving in water	3. Physical Change
iv. Fruit rotting	4. Chemical Change

37.

A (Action)	B (Type of Change)
i. Making juice from raw sugarcane	1. Physical Change
ii. Making soap	2. Chemical Change
iii. Evaporating water	3. Physical Change
iv. Fruit, food rotting	4. Chemical Change

IV. Write True or False for the following statements:

38. Making compost from leaves is a physical change. (Easy)
39. Iron and rust are the same type of substances. (Easy)
40. Coating iron with zinc is called galvanization. (Average)

V. Guess the relationship between the first two words and relate it to the third word:

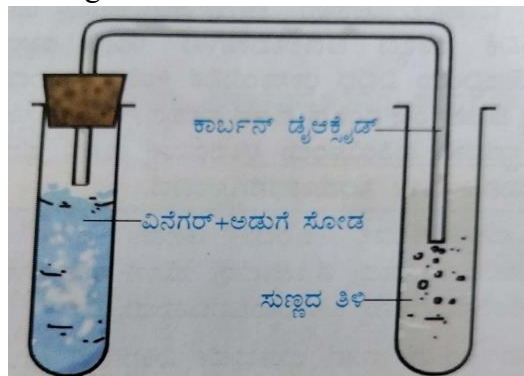
41. Chemical change: New substance :: Physical change : _____ (Easy)
42. Fruit ripening : Chemical change :: Ice melting : _____ (Easy)
43. Color change : Chemical change :: State change : _____ (Easy)
44. Burning : Chemical change :: Melting : _____ (Easy)

VI. Answer the following questions in one word or one sentence:

45. Give one example of a physical change. (Easy)
46. What change occurs during the burning of a substance? (Average)
47. Making juice from sugarcane is an example of what change? (Easy)
48. What kind of change is soap making? (Easy)

VII. Answer the following questions in two to three sentences: (Short Answer – 2 Marks)

49. Write two differences between physical change and chemical change. (Average)
50. Why is salt dissolving in water is a physical change? (Average)
51. Write the characteristics of a physical change. (Average)
52. If a copper sheet turns green, why is it a chemical change? (Average)
53. Burning paper is said to be a chemical change. Why? (Average)
54. Soap making is a chemical change. Why? (Difficult)
55. The rate of rusting of iron is higher in coastal areas than in deserts. Explain why. (Difficult)
56. This image indicates a system for passing gas through limewater.



Write the appropriate equation. (Difficult)

VIII. Answer the following questions in three to four sentences: (Brief Answer – 3 Marks)

57. Give three examples of physical changes. (Difficult)
58. Write 3 examples of chemical changes. (Difficult)
59. Describe the process of dissolving salt in water. (Difficult)
60. Write the methods used to prevent iron from rusting. (Difficult)
61. What is galvanization? Why is it better to galvanize iron pipes used for transporting water? (Difficult)

IX. Answer the following questions in four to five sentences: (Short Essay – 4 Marks)

62. Explain four characteristics of chemical changes. (Difficult)
63. Write four differences between physical and chemical changes. (Difficult)
64. Demonstrate, with examples, that physical change is reversible and chemical change is irreversible. (Difficult)

X. Answer the following questions: Five-mark questions (Long Answer – 5 Marks)

65. What are physical and chemical changes? Explain each with two everyday examples. (Difficult)

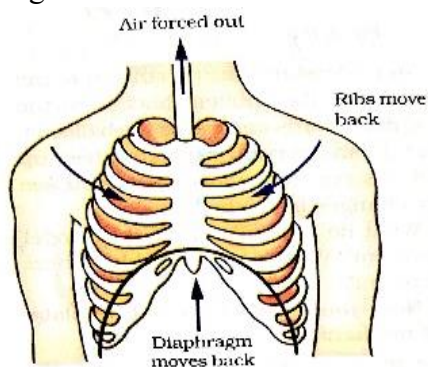
Unit- 6. Respiration in organisms

Learning Outcomes:

1. Realize that breathing is necessary for living things.
2. Understand the types of respiration.
3. Explain the process of respiration.
4. Understand the methods of respiration in different organisms.

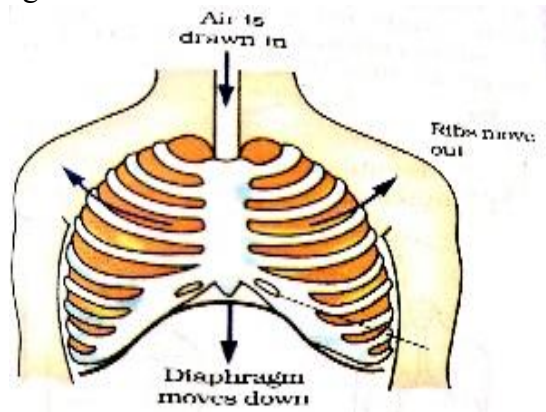
I. For each of the following, four options are provided; choose and write the correct one:

1. Organisms are made up of microscopic units called
 - A. the cell
 - B. the heart
 - C. the lungs
 - D. gall bladder(Easy)
2. Oxygen in the air helps in cells.
 - A. To gather food
 - B. To carry food
 - C. To collect water
 - D. To breakdown the food(Easy)
3. Products released in aerobic respiration are
 - A. Alcohol and water
 - B. Alcohol and carbon dioxide
 - C. Carbon dioxide and water
 - D. Oxygen and water(Average)
4. An equation for anaerobic respiration
 - A. Glucose uses oxygen → carbon dioxide + water + energy
 - B. Glucose without oxygen consumption → Alcohol + water
 - C. Glucose without using oxygen → carbon dioxide + water + energy
 - D. Glucose without using oxygen → Alcohol + Carbon Dioxide + Energy(Average)
5. The figure below indicates



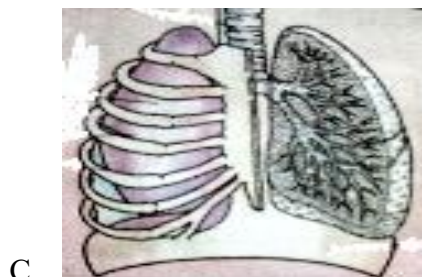
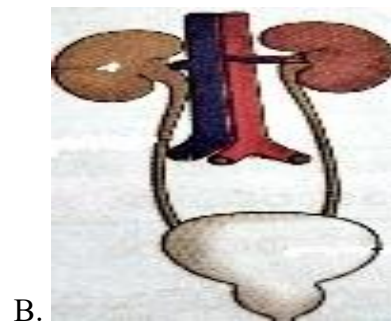
- A. transportation
 - B. Circulation
 - C. inhalation
 - D. Exhalation
- (Average)

6. The figure below illustrates



- A. Exhalation
 - B. inhalation
 - C. transportation
 - D. ejection
- (Average)

7. Human respiratory system is (Average)



8. The Organ of respiration in fishes

- A. fins
 - B. the tongue
 - C. the nose
 - D. the gills
- (Average)

9. Which of the following is the correct statement?

- A. On inhalation our lungs expand and on exhalation return to the original position as the air is expelled.
- B. Lungs contract on inhalation and expand on exhalation.
- C. Lung shows no change in inhalation and exhalation.
- D. None of the above statements are correct. (Easy)

10. Breathing is necessary for living things. because
A. survival of Organisms
B. Respiration is to release energy from food
C. To break down glucose
D. All of the above (Easy)
11. Which of the following is the correct statement
A. As physical activity increases, so the rate of respiration increases.
B. As physical activity increases, the respiratory rate decreases.
C. Physical activity has no effect on respiration.
D. None of the above. (Average)
12. An organ helps in exchange of gases takes place in earthworms is
A. the gills
B. the lungs
C. the heart
D. wet skin (Average)
13. The part where the exchange of gases takes place in plants is
A. the lungs
B. the gills
C. wet skin
D. stomata (Easy)
14. Respiratory organ in cockroaches
A. the lungs
B. the gills
C. spiracles
D. stomata (Average)
15. The respiratory rate means,
A. number of inhalations a person can take in a minute
B. Only the number of exhalations a person can take in a minute
C. The number of times a person's heart beats in one minute
D. The number of breaths a person takes in one minute (Average)
16. The main purpose of respiration in living organisms is:
A. Food storage
B. Energy production
C. Growth
D. Nutrition (Average)
17. The respiratory organ of humans is:
A. Heart
B. Kidney
C. Lungs
D. Stomach (Easy)
18. The type of respiration that occurs in yeast is:
A. Aerobic
B. Anaerobic
C. Photosynthesis
D. Digestion (Average)

19. The form of energy released during respiration is:
 A. ATP
 B. DNA
 C. RNA
 D. CO₂ (Easy)
20. How many lungs are needed for human respiration?
 A. 1 B. 2 C. 3 D. 4 (Easy)

II. Fill in the blanks with the correct answers:

21. Glucose, with the use of oxygen, produces carbon dioxide along with ____ and _____. (Easy)
22. The process of breaking down food and releasing energy is _____. (Easy)
23. During respiration, the food component _____ is used. (Easy)
24. Organisms carry out the _____ process to produce energy. (Easy)
25. The gas released after respiration in humans is _____. (Easy)
26. Aquatic animals absorb oxygen for respiration because they have _____. (Easy)

III. Match the column A with the column B : (Average)

27.

A	B
i. Respiration	1. Respiratory waste
ii. Lungs	2. Respiration in humans
iii. Gills	3. Energy production
iv. Carbon dioxide	4. Fish

28.

A	B
i. Glucose	1. Unit of energy
ii. ATP	2. Required for aerobic respiration
iii. Yeast	3. Source of food energy
iv. Oxygen	4. Anaerobic respiration

IV. Guess the relationship between the first two words and relate it to the third word (Analogies):

29. Lungs : Human :: Gills : _____ (Easy)
30. Respiration : Energy :: Food : _____ (Easy)
31. ATP : Energy :: Glucose : _____ (Easy)
32. Respiration : Oxygen :: Photosynthesis : _____ (Easy)

V. Answer the following questions in one word or one sentence:

33. Which gas is inhaled during respiration? (Easy)
34. What is the basic raw material needed for energy production through respiration? (Easy)
35. What is the main waste gas released from respiration? (Easy)
36. What type of respiration is yeast an example of? (Easy)

VI. Answer the following questions in two to three sentences: (Short Answer – 2 Marks)

37. What is ATP?(AVERAGE)
38. What are the products of respiration? (Easy)
39. What are the two types of respiration? (Easy)

40. Why is respiration said to be essential for living organisms? (Average)

41. Fish can breathe in water, why? (Average)

42. Alcohol is produced during respiration in yeast. Why?(Average)

VII. Answer the following questions in three to four sentences: (Brief Answer – 3 Marks)

43. Explain how the process of respiration occurs in humans. (Difficult)

44. Give an example of anaerobic respiration.(Difficult)

45. Explain how yeast produces energy experimentally. (Difficult)

VIII. Answer the following questions in four to five sentences: (Short Essay – 4 Marks)

46. Describe the organs involved in the process of respiration in humans. (Difficult)

47. Explain the characteristics of respiration. (Difficult)

48. What is respiration? And identify the differences in the characteristics of respiration. (Physical vs. Biological process). (Difficult)

IX. Answer the following questions: Five-mark questions (Long Answer – 5 Marks)

49. Explain the steps of the respiration process and describe its importance. (Difficult)

50. Compare aerobic and anaerobic respiration based on the lesson. (Difficult)

51. What are the steps of the respiration process? Explain them. (Difficult)

Unit - 7.
Transportation in animals and plants

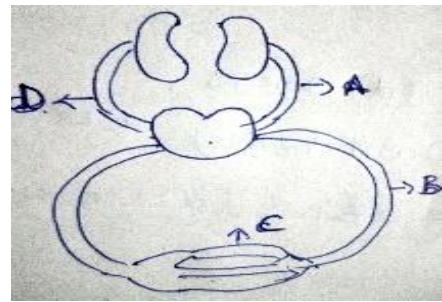
Learning Outcomes:

1. Understanding transportation and excretion methods in animals and plants.
2. Understanding animal excretion methods.
3. Explaining the process of water and mineral transport in plants.
4. Explaining the role of phloem in food transport in plants.
5. Identifying the parts of the human circulatory system.
6. Explaining the main tissues of blood and their functions.
7. Understanding the function of the heart and the process of the circulatory system.
8. Explaining the importance of the lymphatic system.
9. Comparing diverse transport methods in living organisms.
10. Explaining the importance of blood and its role in maintenance of health .
11. Awareness of blood flow problems (e.g., blood pressure, anemia).

I. Choose the correct answer from the four options given for each of the following:

1. The fluid in plasma form in the human body
 - A. Blood
 - B. Water
 - C. Cell
 - D. Oxygen (Easy)
2. Blood cell that provides oxygen to the body
 - A. White blood cells
 - B. Red blood cells
 - C. Yellow blood cell
 - D. Platelets (Easy)
3. The blood cell that helps blood clot when we get injured
 - A. White blood cells
 - B. Platelets
 - C. Red blood cells
 - D. Hemoglobin (Average)
4. Blood vessel that carries oxygenated blood from the heart to all parts of the body
 - A. Vein
 - B. Artery
 - C. Capillary
 - D. Lung (Average)
5. The rate at which pulse is expressed is
 - A. Pulse rate
 - B. Speed
 - C. Velocity
 - D. Heart Beat (Easy)

6. Part identifying capillaries in the picture



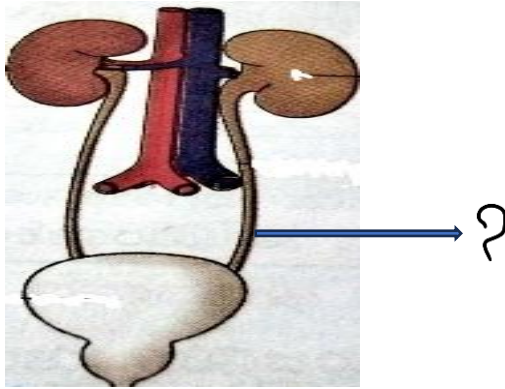
- A. B is correct
 - B. D is correct
 - C. A is correct
 - D. C is correct (Average)
7. The partition wall between the two chambers in the heart helps to prevent:
- A. Mixing of hormones with blood
 - B. Mixing of oxygenated blood with carbon dioxide-rich blood
 - C. Water and oxygen
 - D. Blood and Urine (Average)
8. Device used to measure heartbeat
- A. Goniometer
 - B. Thermometer
 - C. Stethoscope
 - D. Sphygmomanometer (easy)
9. The scientist ridiculed for the idea that blood oscillates in the body's vessels
- A. William Harvey
 - B. Galileo
 - C. Thomas Alva Edison
 - D. C.V. Raman (Average)
10. Animal without any circulatory system :
- A. Sponge
 - B. Fish
 - C. Plant
 - D. Cockroach (Average)
11. Gas used by leaves in photosynthesis:
- A. Hydrogen
 - B. Oxygen
 - C. Carbon dioxide
 - D. Nitrogen (Easy)
12. The part of the plant transports water and nutrients to the leaves:
- A. Leaf
 - B. Root
 - C. Flower
 - D. Seed (Easy)

13. A group of cells performing specific functions in an organism :
A. Organ
B. Tissue
C. Cell
D. Organ system (Easy)
14. Vascular tissue that transports water and nutrients in plants :
A. Xylem
B. Leaves
C. Phloem
D. Root hairs (Easy)
15. Vascular tissue that transports food to all parts of the plant
A. Xylem
B. Phloem
C. Stem
D. Leaf (Easy)
16. A plant easily used in school to demonstrate water rising through the stem
A. Rose
B. Jasmine
C. Balsam
D. Okra (Easy)
17. Plants also release a lot of water. This process is called
A. Absorption
B. Photosynthesis
C. Transpiration
D. Nutrition (Average)
18. The part of the leaves helps in transpiration:
A. Chlorophyll
B. Stomata
C. Tissue
D. Blood vessel (Easy)
19. Form in which aquatic animals excrete waste
A. Uric acid
B. Ammonia
C. Urea
D. None of the above (Average)
20. Waste commonly excreted by an adult human is :
A. Urea
B. Ammonia
C. Minerals
D. Carbon dioxide (Average)
21. Organ that filters blood in the human body
A. Heart
B. Stomach
C. Kidney
D. Small intestine (Easy)

22. A person facing kidney failure. The advice given by the doctors

- A. Blood test
- B. Dialysis
- C. Angiogram
- D. Biodegradation (Easy)

23. The part shown in the picture, where urine enters the kidneys through tube-like structure



- A. Kidney
- B. Ureter
- C. Urethra
- D. Bladder (Average)

24. Organ that pumps blood in humans

- A. Liver
- B. Kidney
- C. Heart
- D. Lung (Easy)

25. Xylem is responsible for the transport of:

- A. Food
- B. Water and minerals
- C. Lymph
- D. Saliva (Easy)

26. Reason for the red colour of human blood:

- A. Melanin
- B. Hemoglobin
- C. Carotene
- D. Lymph (Easy)

27. Number of chambers in the human heart :

- A. 2 B. 3 C. 4 D. 5 (Easy)

28. Plasma is the fluid part of :

- A. Lymph B. Urine C. Blood D. Urea (Easy)

29. Blood component that fights against infections :

- A. Red blood cell
- B. White blood cell
- C. Plasma
- D. Platelets (Easy)

30. Haemoglobin is present in
 A. Plasma
 B. Platelets
 C. White Blood Cell
 D. Red Blood Cell (Easy)
31. Hemoglobin carries
 A. Carbon dioxide
 B. Oxygen
 C. Nitrogen
 D. Hydrogen (Easy)
32. Capillaries establish a connection between
 A. Arteries and veins
 B. Xylem and Phloem
 C. Heart and Lungs
 D. Plasma and Lymph (Average)

II. Fill in the blanks with the correct answers:

33. The heart is a _____ shaped organ. (Easy)
34. The colourless fluid substance in blood is _____.(Easy)
35. The part that prevents back flow of blood in blood vessel is _____. (Easy)
36. The vascular tissue that transport food to all parts of the plant is _____. (Easy)
37. The blood vessel that carry blood from the heart to all parts of the body is _____
 (Easy)
38. The blood vessel that carry blood from all the body parts to the heart is _____.
 (Easy)
39. The vascular tissue for the transport of water and minerals in plant is _____.
 (Easy)
40. The substance responsible for the red colour of blood is _____. (Easy)
41. The fluid part of blood is _____.(Easy)

III. Match the column A with the column B: (Average)

42.

A	B
1. Heart	i. Blood purification
2. Liver	ii. Pumping blood
3. Xylem	iii. Food transport
4. Phloem	iv. Water and mineral transport

43.

A	B
1. Plasma	i. Carries oxygen
2. Haemoglobin	ii. Fluid part
3. Valves	iii. Regulates blood flow in the heart
4. Capillaries	iv. Blood exchange process occurs

IV. Answer the following questions in one word or one sentence:

- 44. Name the fluid part of blood. (Easy)
- 45. Which tissue transports food in plants? (Easy)
- 46. How many chambers are there in the human heart? (Easy)
- 47. What is the main function of white blood cells? (Easy)
- 48. What is heartbeat? (Easy)

V. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

- 49. Write the difference between arteries and veins. (Average)
- 50. What is the function of the heart? (Average)
- 51. Explain the function of capillaries. (Average)
- 52. What are the parts included in the human excretory system? (Average)
- 53. Xylem transports in a specific direction. Why? (Average)
- 54. Phloem is an essential organ in plants. Why? (Average)

VI. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

- 55. Write the differences between xylem and phloem. (Difficult)
- 56. Write the diagrammatic representation of blood circulation in human body. (Difficult)
- 57. Explain the functions of plasma, red blood cells, white blood cells, and platelets. (Difficult)

VII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

- 58. Explain the structure and function of the heart. (Difficult)
- 59. Explain blood circulation in humans with a neat diagram. (Difficult)

VIII. Answer the following questions: Five Marks Questions (Long Answer – 5 Marks)

- 60. Explain how water, minerals and food transportation occurs in plants. (Difficult)
- 61. Explain the parts, structure, and blood flow pathway of the heart. (Difficult)

Unit - 8.
Reproduction in plants

Learning outcome:

1. Understanding reproduction methods in plants.
2. Identifying the meaning and necessity of reproduction.
3. Explaining the difference between sexual and asexual reproduction.
4. Identifying the main parts of a flower and explaining their functions.
5. Explaining the processes of pollination and fertilization.
6. Explaining different methods of seed dispersal.
7. Identifying various methods of asexual reproduction.
8. Explaining the process of plant growth from a seed: a. Sowing → Germination → Growth → New plant.
9. Understanding the importance of new plant production through natural methods.

I. Choose the correct answer from the four options given for each of the following:

1. Method of reproduction in rose plants
A. Sexual
B. Fragmentation
C. Budding
D. Fission (Easy)
2. By this method does reproduction occur in Bryophyllum plants.
A. Buds on leaf margins
B. Nodes on the stem
C. Root
D. All of the above (Easy)
3. Unisexual flowers have
i. Stamen ii. Pistil iii. Stamen and Pistil iv. Only one of the above is correct
A. i, ii, iv B. i, ii C. Only iv D. Only ii (Average)
4. Papaya, cucumber have these type of flowers.
A. Bisexual B. Unisexual C. Male gamete D. Female gamete
(Average)

5. The reproductive part in the plant given below is:



- A. Stamen B. Pistil C. Calyx D. Petiole (Average)

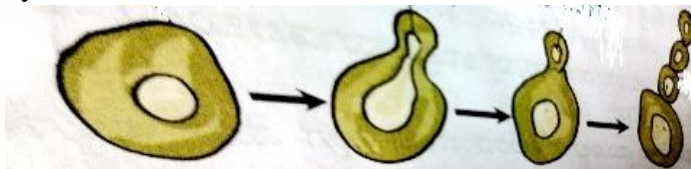
6. In plants, after fertilization, a mature ovary becomes

- A. Fruit B. Flower C. Leaf D. Stem (Easy)

7. Medium that does not help in pollination in plants

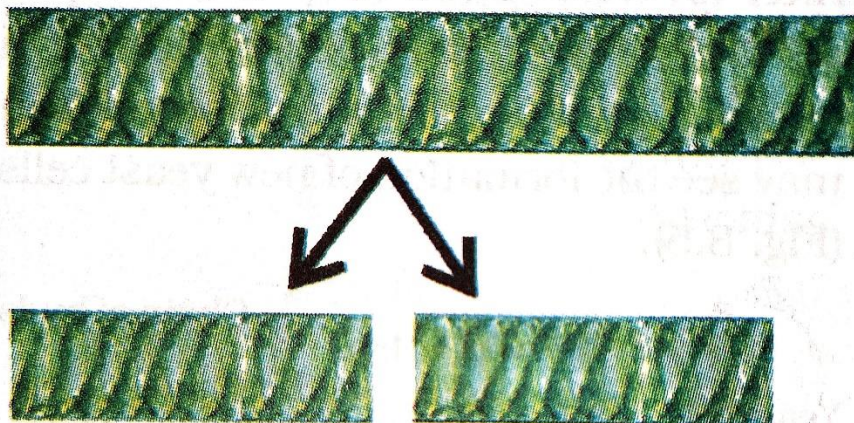
- A. Wind B. Water C. Insects D. Light (Easy)

8. Reproduction by the budding method is given in the figure. The organism reproduces by this method is:



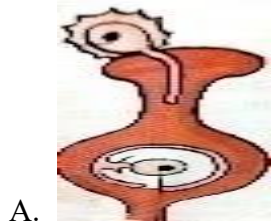
- A. Amoeba B. Yeast C. Fungi D. Algae (Average)

9. Observe the figure. The Type of reproduction shows here is:



- A. Germination B. Sexual C. Fragmentation D. Pollination
(Average)

10. Part where zygote is formed in the picture (Average)



11. Male part necessary for sexual reproduction in plants

- A. Ovary B. Stamen C. Pistil D. Anther (Average)

12. Female part of a flower is

- A. Ovule B. Petal C. Stamen D. Pedicel (Easy)

13. In plants the process that occurs before the formation of fruits from the flower is

- A. Fertilization B. Pollination C. Ejection D. Hybridization (Easy)

14. Advantage of hybrid seeds is

- A. Selling B. Good yield C. No flowers D. Low yield (Average)

15. Animals help in seed dispersal are

- A. Fish B. Birds C. Plants D. Insects (Average)

16. After fertilization ovule becomes:

- A. Fruit B. Flower C. Seed D. Leaf (Easy)

II. Fill in the blanks with the correct answers:

17. The process by which pollen reaches the stigma is called _____. (Easy)

18. The _____ inside the ovule develops into a seed after fertilization. (Easy)

19. _____ reproduction occurs in potatoes, beans, etc. (Easy)

20. The flower is the _____ organ of the plant. (Easy)

21. Fertilization occurs after the _____ process. (Easy)

22. In Reproduction of plants, _____ dispersal occurs through birds and wind. (Easy)

23. New plant arises from the _____ part of Bryophyllum in its asexual reproduction. (Easy)

III. Match the column A with the column B: (Average)

24.

- A
- i. Pollen grain
 - ii. Ovary
 - iii. Fertilization
 - iv. Asexual reproduction

- B
- 1. Female part
 - 2. Production without seeds
 - 3. Male gamete
 - 4. Fusion of ovule and pollen

- | | | |
|-----|------------------|--------------------------------------|
| 25. | A | B |
| | i. Birds | 1. Male part |
| | ii. Potato | 2. Female part |
| | iii. Ovary | 3. Reproduction from vegetative buds |
| | iv. Pollen grain | 4. Helps in seed dispersal |

IV. Answer the following questions in one word or one sentence:

26. What is the process that occurs after pollination called? (Average)
27. What type of reproduction occurs in potatoes? (Easy)
28. Which process is the cause for the formation of fruits in seeds? (Easy)
29. Name the two gametes needed in sexual reproduction in plants. (Average)
30. What is the male reproductive part of a flower?(Easy)
31. Name the female reproductive part of a flower? (Easy)
32. What happens to a ripened ovary in plants after fertilisation? (Average)
33. Give an example of plants that reproduce through spores. (Average)
34. How do fungi grow on bread? (Average)
35. What are the two methods of reproduction in plants? (Average)
36. What is a node? (Average)

V. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

37. Write the meaning of pollination. (Easy)
38. Write the structure of the pistil. (Easy)
39. Mention two methods of seed dispersal. (Easy)
40. Write the difference between ovule and pollen grain. (Average)
41. Why are flowers considered the main part for plant reproduction? (Average)
42. How does sexual reproduction increase plants number in a short period?(Difficult)
43. All flowers do not produce fruits.Why? (Average)
44. How is asexual reproduction useful in agriculture? (Difficult)
45. How does reproduction occur in Cactus? (Average)

VI. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

46. Write the difference between sexual and asexual reproduction. (Difficult)
47. Explain the three main parts of a flower. (Difficult)
48. Explain three methods of asexual reproduction with examples. (Difficult)
49. Draw a neat labelled diagram showing Fertilization in plants.

VII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

50. Explain the process from pollination to fruit production. (Difficult)
51. Explain the stages of fruit development from a flower with a diagram. (Difficult)
52. Draw a neat diagram showing the parts of a flower and label them. (Difficult)

Unit - 9.
Motion and Time

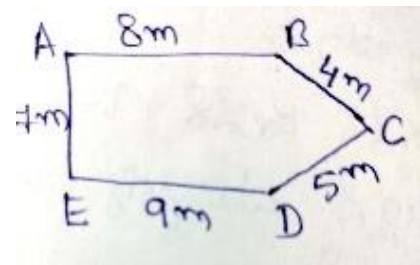
Learning Outcomes:

1. Identifying types of motion.
2. Relating distance, time, and speed to given situations.
3. Explaining the meaning of motion.
4. Identifying whether an object is in uniform or non-uniform motion.
5. Developing the concept of motion.
6. Calculating average speed using the speed formula.
7. Drawing and analyzing distance-time graphs.
8. Explaining the SI unit for measuring time and types of clocks.
9. Solving mathematical problems for time and speed calculations.
10. Explaining the importance of motion in daily life.

I. Choose the correct answer from the four options given for each of the following:

1. An example of oscillatory/periodic motion.
A. Motion of a bus
B. Motion of a swing
C. Motion of an ox in a sugarcane press
D. Motion of the Earth around the Sun (Average)
2. Motion of eight planets around the Sun
A. Periodic motion
B. Rectilinear motion
C. Circular, rotational motion
D. Revolutionary motion(Average)
3. Instrument for measuring the distance travelled by a scooter
A. Odometer
B. Thermometer
C. Temperature gauge
D. Lactometer (Easy)
4. An example of rectilinear motion
A. Motion of clock hands
B. Motion of a train
C. Motion of a snake
D. Motion of a swing (Easy)
5. International unit of speed
A. Meter per second (m/s)
B. Centimetre per second (cm/s)
C. Millimetre per second (mm/s)
D. Kilometre per second (km/s) (Easy)
6. Formula used to find speed
A. Speed = Distance travelled ÷ Time taken
B. Speed = Time taken ÷ Distance travelled
C. Speed = Distance travelled × Time
D. Speed = Acceleration × Time (Average)

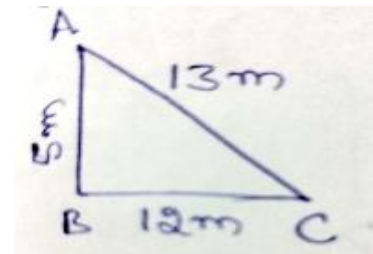
7. Distance covered by a bus traveling at a speed of 60 km/h in 20 minutes
 A. 80 km B. 120 km C. 30 km D. 40 km (Average)
8. In the image below, if Rani starts from A and reaches B, then from B to C, then from C to D, and then from D to E, her total distance traveled



- A. 32 m B. 39 m C. 33 m D. 23 m (Difficult)
9. If an object moving in a circular path starts from point A and returns to point A again, the distance it traveled is



- A. πr^2 B. $2\pi r$
- C. πr D. πr^3 (Difficult)
10. In the image, if an object starts from A, reaches B, and then arrives at C, its displacement is

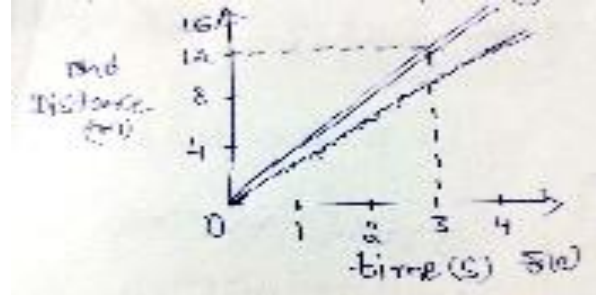


- A. 13 m B. 12 m C. 17 m D. 5 m (Difficult)
11. Body A covers a certain distance in less time than Body B. Here, the speed of Body A is
- A. Less than the speed of Body B.
 B. Greater than the speed of Body B.
 C. Equal to the speed of Body B.
 D. Equal to the velocity of Body B. (Average)
12. The distance from Bengaluru to Mumbai is 1200 km. If a bus takes 10 hours to cover this distance, the speed of the bus is
- A. 510 km/h
 B. 120 km/h
 C. 12000 km/h
 D. 50 km/h (Difficult)

13. The factor that determines if one car is moving faster than another

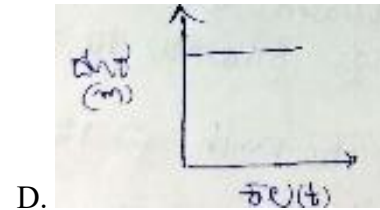
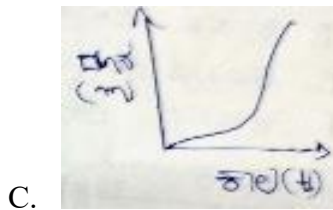
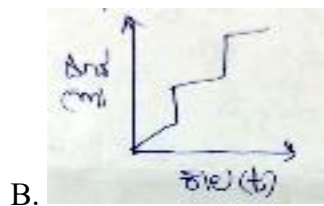
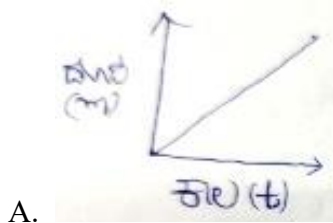
- A. Speed B. Force C. Pressure D. Weight (Easy)

14. According to this distance-time graph, the speed of the object is



- A. 20 m/s B. 80 m/s C. 5 m/s D. 4 m/s (Difficult)

15. Among these distance-time graphs, the graph indicating uniform motion is
(Average)

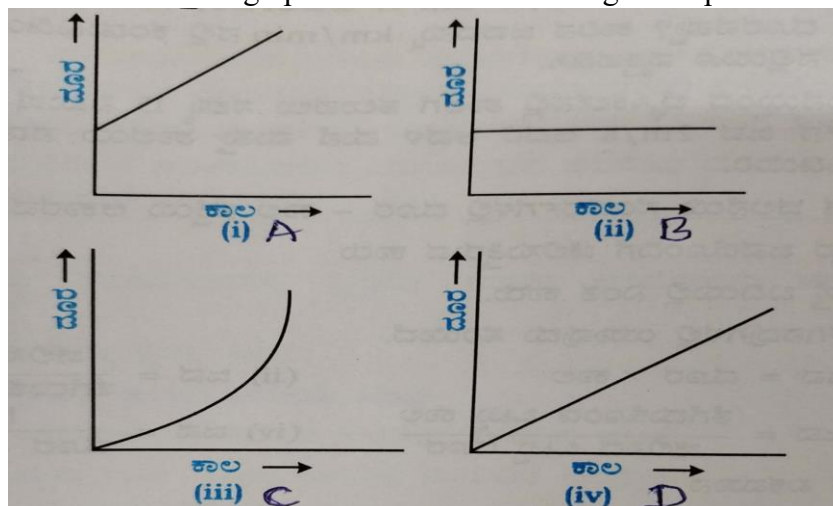


16. The distance between two stations is 120 km. If a train takes 4 hours to cover this distance, calculate the speed of the train.

- A. 480 km/h B. 30 km/h C. 240 km/h D. 120 km/h

(Difficult)

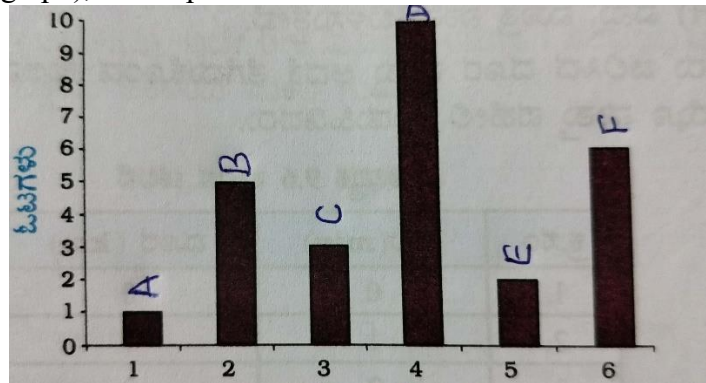
17. The distance time graphs shows a truck moving with speed which is not constant



- A. i
B. ii
C. iii
D. iv

(Difficult)

18. In this bar chart (distance-time graph), which person has run more runs?

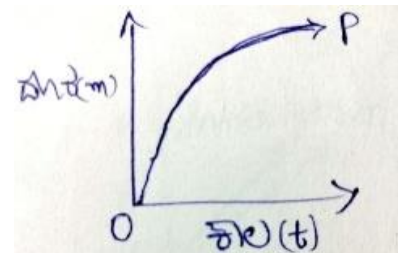


- A. Person E B. Person F C. Person B D. Person C
(Average)

19. Speed and velocity are different from each other because

- A. They have the same direction and magnitude
B. The magnitude may be the same but the direction may be different
C. Both have the same magnitude
D. Both may have the same direction (Average)

20. According to this graph, object P is



- A. Moving with non-uniform speed.
B. Moving with uniform speed.
C. At rest
D. Moving with high speed. (Average)
21. The unit commonly used to measure distance of motion
A. Second B. Meter C. Litre D. Gram (Easy)
22. Speed can be calculated as
A. Time $\div$ Distance
B. Distance $\div$ Time
C. Speed $\times$ Time
D. Time $\times$ Direction (Average)
23. International unit of measurement for speed is
A. km/h
B. meter/second
C. Second
D. Kilogram (Easy)

24. Example of uniform motion is
 A. A running person
 B. Clock hands
 C. A cyclist
 D. Blowing wind (Easy)
25. Instrument for measuring time is
 A. Meter stick
 B. Clock
 C. Weights
 D. Lactometer (Easy)
26. In uniform motion, distance is covered as
 A. Unequal
 B. Less
 C. Equal
 D. Zero (Easy)
27. The graph used to show motion is
 A. Time-distance graph
 B. Line graph
 C. Bar graph
 D. Pie chart (Average)

II. Fill in the blanks with the correct answers:

28. If motion has both direction and distance, it is called _____. (Easy)
29. In a clock, one hour = _____ minutes. (Easy)
30. The _____ instrument is used to indicate speed. (Easy)
31. 1 hour = _____ seconds. (Easy)
32. The SI unit for measuring time is _____. (Easy)
33. Speed = _____ ÷ Time. (Easy)
34. In uniform motion, an object covers _____ distance. (Easy)
35. The SI unit of speed is _____. (Easy)
36. Distance travelled = Speed × _____. (Easy)

III. Match the column A with the column B : (Difficult)

37.

A	B
i. Time	1. Equal distance covered in equal time
ii. Speed	2. Object at rest
iii. Stationary object	3. Second
iv. Uniform motion	4. Distance ÷ Time

38.

A	B
i. Speedometer	1. Measuring time
ii. Clock	2. Measuring distance traveled
iii. Uniform motion	3. Measuring speed
iv. Non-uniform motion	4. Covering equal distance
v. Odometer	5. Covering unequal distance

IV. Answer the following questions in one word or one sentence:

- 39. What is the formula to calculate speed? (Average)
- 40. What is the SI unit of time?(Easy)
- 41. What is repetitive motion called? (Average)
- 42. What is the relationship between speed and time? (Average)
- 43. Name an example of uniform motion. (Average)

V. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

- 44. What is a stationary object?(Easy)
- 45. What are the types of motion? (Average)
- 46. What is the relationship between speed and direction? (Average)
- 47. What is the average speed of a car that travels 60 km in one hour? (Difficult)
- 48. Why is speed calculated by Distance $\div$ Time? (Difficult)
- 49. Why is uniform motion called tireless motion? (Average)
- 50. How is speed an indicator of motion's progress? (Difficult)

VI. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

- 51. Explain the difference between speed and velocity. (Difficult)
- 52. Write the three main types of motion with examples. (Difficult)

VII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

- 53. Explain uniform and non-uniform motion. (Difficult)
- 54. Write the three main types of motion with examples. (Difficult)
- 55. Calculate the speed: A bike travelled 10 km in 20 minutes. What is its average speed? (Difficult)

VIII. Answer the following questions: Five Marks Questions (Long Answer – 5 Marks)

- 56. A border is 90 km away. A bus reaches it in 3 hours. Calculate the average speed of the bus. (Difficult)
- 57. Explain the importance of time. (Difficult)

Numerical Problems: (Difficult)

- 58. A vehicle covered a distance of 120 km in 3 hours. Calculate its average speed.
- 59. If a bus travels at a speed of 60 km/h for 2.5 hours, how much distance has it covered?
- 60. A bicycle travels 5 km in 20 minutes. What is its average speed?
- 61. A car covered a distance of 90 km in 2 hours. Then it traveled 60 km in 1 hour. What is the total average speed?
- 62. If a person walks at a speed of 1.5 m/s, how far will they travel in 10 seconds?

Activity-Based Questions: (Difficult)

63. Home Activity:

Topic: Estimate the distance from a nearby shop to your house. Then, calculate the time you took and find the average speed.

64. In-school Activity:

Topic: Measure how long your friend takes to cover 20 meters in a straight line using a stopwatch. Then calculate their speed.

65. Time Measurement Activity:

Topic: Using a clock, measure the time you take for your daily activities in the morning. For example: bathing, eating, going to school. Calculate their total time.

66. Distance-Time Graph Activity: The details of the distance traveled by a person are given below. Draw a Distance-Time Graph based on the following time and distances:
0 minutes – 0 m 5 minutes – 250 m 10 minutes – 500 m 15 minutes – 500 m 20 minutes – 750 m. At what time was the person stationary in this motion?

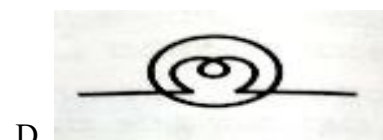
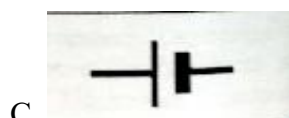
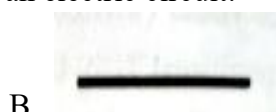
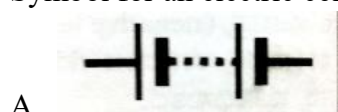
Unit - 10.
Electric current and its effects

Learning Outcomes:

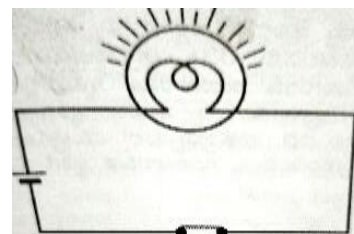
1. Using symbols for various components in an electric circuit.
2. Understanding the heating effect of electric current.
3. Observing and explaining how the magnetic effect is produced by electric current.
4. Understanding the working mechanism of a fuse.
5. Defining the use of electromagnets and identifying their uses in daily life.
6. Comparing and analyzing devices based on various effects of electric current.
7. Making a simple electromagnet.
8. Understanding and following safety rules in electrical usage.

I. Choose the correct answer from the four options given for each of the following:

1. Symbol for an electric cell used in an electric circuit: (Easy)

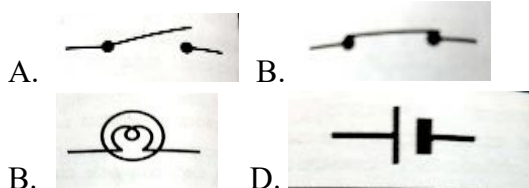


2. Device containing a simple electric circuit (Easy)
- A. Torch
 - B. Transistor
 - C. Transmitter
 - D. Television
3. In the following simple electric circuit, the electric bulb



- A. Will not light up
 - B. Will light up
 - C. Will burn out
 - D. Connection is incorrect. (Easy)
4. When the electric circuit is in the connected position (when the circuit is closed)
- A. Current will not flow in the circuit
 - B. Current will flow in the circuit.
 - C. The circuit will burn out.
 - D. The bulb will burn out. (Average)

5. In the following symbol, the closed position of the push button (Average)



6. This arrangement in a four-cell battery

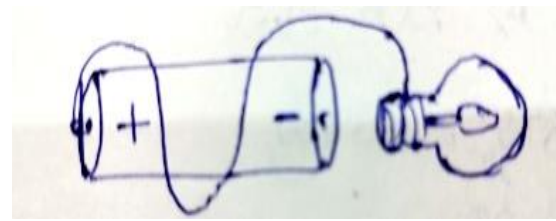


- A. Is not connected correctly
 B. Is connected correctly.
 C. Positive-positive should be connected
 D. Negative-negative should be connected. (Average)
7. The reason for the fuse melting when high current flows in an electric circuit
 A. Magnetic effect
 B. Chemical effect
 C. Light effect
 D. Heating effect (Average)
8. Metal used in the filaments of common electric bulbs
 A. Copper
 B. Iron
 C. Aluminium
 D. Tungsten (Easy)
9. Metal alloy used in the manufacture of electric fuses
 A. Lead-Tin
 B. Lead-Copper
 C. Copper-Brass
 D. Iron-Copper (Easy)
10. Device used for electrical safety instead of fuses in recent days
 A. LED
 B. MCB
 C. LCD
 D. FUSE(Easy)
11. When an electric heater is placed in a bucket of water to heat water, the bucket becomes hot after some time. This is an example of electricity's
 A. Chemical effect
 B. Magnetic effect
 C. Heating effect
 D. Light effect(Average)

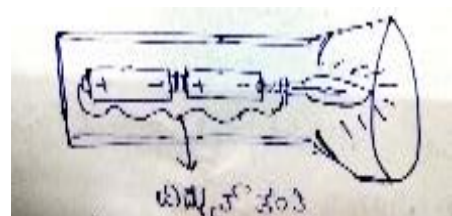
12. Name of the device in this picture



- A. Electric oven
 - B. Electric bulb
 - C. Electric fuse
 - D. Electromagnet (Average)
13. When current is made to flow through the push button of a room heater, it
- A. Secretes a type of chemical.
 - B. Emits heat.
 - C. Acquires magnetism.
 - D. Explodes. (Average)
14. In this picture

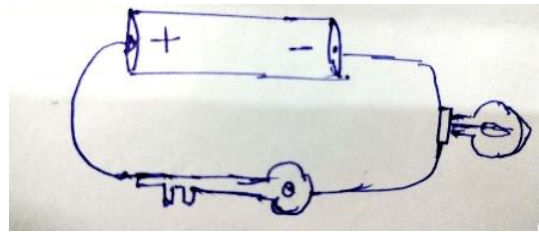


- A. The bulb is lit.
 - B. The bulb is not lit.
 - C. The connection should be changed.
 - D. Another dry cell should be connected. (Average)
15. How many terminals does an electric cell have?
- A. One
 - B. Two
 - C. Four
 - D. None (Easy)
16. In our homes, copper wire is mostly used for electrical connections. Because:
- A. Easily available
 - B. Good conductor
 - C. Insulator
 - D. Low cost (Easy)
17. In the internal view of the torch shown in this picture, what is the function of the electric wire?



- A. Conducts electricity.
- B. Does not conduct electricity.
- C. The dry cell should be replaced.
- D. Prevents the light from lighting up. (Average)

18. Electricians' screwdrivers and pliers have a plastic or rubber coating. The reason is
- A. Rubber is easily available.
 - B. Rubber is a good conductor.
 - C. Rubber is a good insulator.
 - D. Rubber is hard. (Average)
19. A simple device used to complete or break an electric circuit
- A. Bulb
 - B. Electric wire
 - C. Switch
 - D. Fuse (Easy)
20. In this picture, which object is used as a switch in the electric circuit?



- A. Battery
 - B. Bulb
 - C. Key
 - D. Electric wire (Average)
21. The reason for using a fuse in an electric circuit:
- A. To increase light
 - B. To increase heat
 - C. To protect devices from excessive current
 - D. To prevent current flow (Average)
22. The device based on the heating effect of electricity is
- A. Fuse
 - B. Dynamo
 - C. Motor
 - D. Speaker (Easy)
23. Magnetic effect from an electric current discovered by:
- A. Ohm
 - B. Edison
 - C. Faraday
 - D. Oersted (Average)
24. Fuse wire is made from this metal:
- A. Iron
 - B. Copper
 - C. Nichrome
 - D. Alloy with a low melting point (Average)
25. Best electrical conductor among these:
- A. Coffee
 - B. Raw plastic
 - C. Copper wire
 - D. Coconut oil (Average)
26. What can be done to increase electromagnetic strength?
- A. Decrease wire turns
 - B. Remove the battery
 - C. Increase wire turns
 - D. Loosen the wire (Average)

27. In an electric bulb, light is produced by this effect:
 A. Magnetic B. Heat
 C. Chemical D. Sound (Easy)
28. Device using the magnetic effect:
 A. Fuse B. Geyser
 C. Electric bell D. Bulb (Easy)
29. A fuse is made from metal with this property:
 A. Low resistance B. Low melting point
 C. Heat tolerant metal D. Magnetic metal (Average)

II. Fill in the blanks with the correct answers:

30. To make an electromagnet, _____ and a battery are used. (Easy)
31. The heat produced when electricity flows is called the _____ effect. (Easy)
32. The _____ effect is responsible for electric pumps or motors working actively. (Easy)
33. If excessive current flows, the fuse wire _____. (Easy)
34. Nichrome is a good _____. (Easy)

III. Match the column A with the column B: (Average)

35.

A	B
i. Fuse	1. Heater function
ii. Static electricity ion	2. Wire melting
iii. Heating effect	3. Attracting iron
iv. Magnetic effect	4. Comb attracting paper

36.

A	B
1. Nichrome	i. Attraction of metallic objects
2. Fuse	ii. Electrical insulator
3. Electromagnet	iii. Useful for heat generation
4. Plastic	iv. Protection from danger

37.

Device	Effect
1. Electric heater	i. Chemical effect
2. Electromagnet	ii. Protective device from heating effect
3. Electric cell	iii. Magnetic effect
4. Fuse	iv. Heating effect

IV. Answer the following questions in one word or one sentence:

38. Write one use of an electromagnet. (Average)
39. Which device uses the heating effect of electricity? (Average)
40. Where and why is a fuse used? (Average)
41. List two devices used based on the heating effect. (Average)

V. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

42. What is the application of electric fuse?(Easy)
43. Name two devices that use the heating effect. (Average)
44. Why is it essential to dispose CFLs safely? (Average)
45. Why is it advisable to use ISI marked products? (Average)
46. List four inventions of Thomas Alva Edison. (Difficult)
47. Why does the fuse wire melt when high current flows? (Difficult)
48. How does the magnetic effect occur when electricity flows through an electric wire? (Difficult)
49. Why is plastic coating used on electric wires? (Difficult)
50. Why is Nichrome wire used in electric stoves? (Difficult)

VI. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

51. Explain the method of making an electromagnet. (Difficult)
52. Explain a device based on the magnetic effect. (Difficult)
53. What measures can be used to make an electromagnet stronger? (Difficult)
54. How does a fuse wire work? Explain using a diagram. (Difficult)

VII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

55. Explain the function of a fuse wire. (Difficult)
56. Explain everyday devices based on the heating effect of electricity. (Difficult)
57. Provide an explanation on "Effects caused by electric current." (Difficult)
58. Why is Nichrome wire used in heating devices? (Difficult)

VIII. Answer the following questions: Five Marks Questions (Long Answer – 5 Marks)

59. Explain the three main effects caused by electric current. (Difficult)
60. Describe your experience of making a simple electromagnet. (Difficult)

Activity-Based Questions:

61. Make a simple electromagnet. Write down the required materials and procedure. (Difficult)
62. Make a simple electric circuit to demonstrate the function of a 'fuse'. (Difficult)

Numerical Problems:

63. A fuse wire can withstand a current of only 5 Amp. If a device uses 1150 W of power with 230 V electricity, is this fuse sufficient?
64. If 2Amp current flows through a Nichrome wire with 10 Ohms resistance, what is the heat produced? ($\text{Heat} = I^2RT$)
65. When electricity flows from a 1.5 V battery, a bulb uses 0.3 Amp current. How much energy does it consume in 10 seconds? ($\text{Power} = VI$, $\text{Energy} = P \times t$)

Unit - 11.
The light

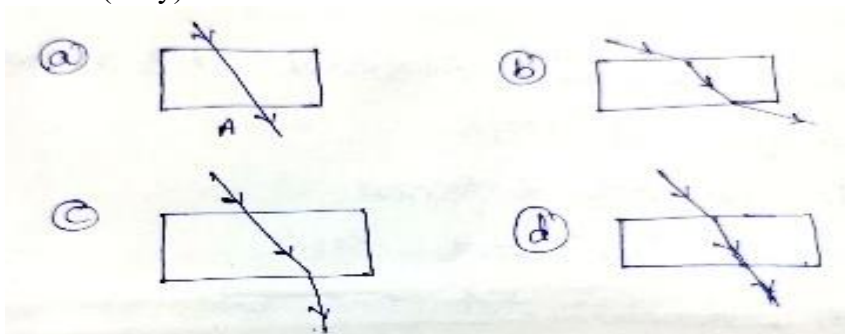
Learning outcomes:

1. Light travels in a straight line. Understanding reflection of light.
2. Understanding the characteristics of images formed by different mirrors.
3. Studying ray diagrams of light reflection.
4. Explaining that light travels in a straight line.
5. Explaining the process and laws of reflection.
6. Understanding the characteristics of images from plane, convex, and concave mirrors.
7. Comparing the size, position, and characteristics of images.
8. Explaining the lateral inversion property of images.
9. Identifying daily uses of each type of mirror. Example: Shaving mirror, rearview mirror, dental use.
10. Examining light behaviours through activities.
11. Experimentally performing mirror experiments.
12. Understanding that light is an important energy in the lives of living beings.

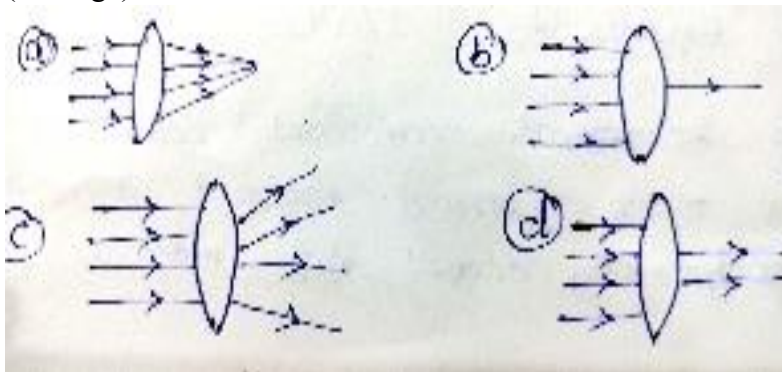
I. Choose the correct answer from the four options given for each of the following:

1. Light travels in this type of path.
A. Straight line path only in air medium
B. Straight line path only in vacuum
C. Always a straight line path
D. Sometimes a straight line path (Easy)
2. When light travels from one medium to another, it changes its direction of propagation. This phenomenon is called.
A. Light absorption
B. Light reflection
C. Light refraction
D. Light scattering (Easy)
3. Light travel at maximum speed in the following:
A. Glass B. Water
C. Diamond D. Kerosene (Easy)
4. In the Panchatantra story of the lion and the rabbit, the scientific reason embedded in tricking the lion by showing its reflection in water is:
A. Light scattering
B. Light refraction
C. Light reflection
D. Light dispersion (Easy)
5. The speed of light in vacuum is
A. 3×10^8 m/s B. 3×10^8 ms
C. 3×10^9 m/s D. 3×10^9 m/s (Average)
6. Mirror that can be used to obtain a real image:
A. Plane mirror
B. Spherical mirror
C. Convex mirror
D. Concave mirror (Average)

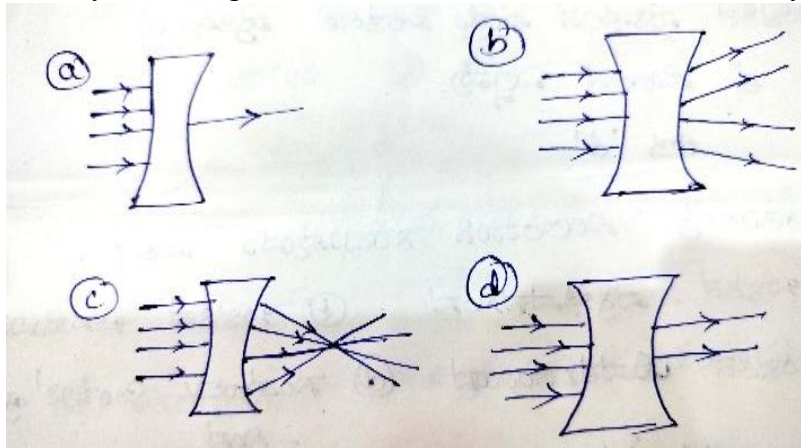
7. Mirror always forms an image of the same size as the object:
 A. Plane mirror
 B. Convex mirror
 C. Concave mirror
 D. Spherical mirror (Average)
8. The image formed by a plane mirror:
 A. Real and erect
 B. Real and inverted
 C. Virtual and erect
 D. Virtual and inverted (Average)
9. The mirror used by drivers in vehicles to see the rear view is:
 A. Plane mirror
 B. Convex mirror
 C. Concave mirror
 D. Spherical mirror (Average)
10. Number of images formed when two mirrors are placed at a 90° angle:
 A. 4 B. 3 C. 2 D. Infinite (Easy)
11. The ray diagram formed when a light ray passes from air through a glass slab is :
 (Easy)



12. February 28th is celebrated as National Science Day in India. On this day:
 A. Sir C.V. Raman announced his research on the Raman effect.
 B. Sir C.V. Raman received the Nobel Prize.
 C. It is Sir C.V. Raman's birthday.
 D. None of the above (Average)
13. Identify in the following ray diagram how refraction occurs in a convex lens
 (Average)



14. Identify the divergence that occurs in a concave lens in the ray diagram. (Average)



15. The materials that cannot be used to make a lens:

- A. Water
- B. Plastic
- C. Clay
- D. Glass (Easy)

16. The lens used for near-sightedness is

- A. Convex lens
- B. Concave lens
- C. Plane lens
- D. Cylindrical lens (Easy)

17. The reason for stars twinkling at night is:

- A. Refraction of light
- B. Scattering of light
- C. Diffraction of light
- D. Total internal reflection (Average)

18. Rainbow is caused by:

- A. Scattering of light
- B. Refraction of light
- C. Reflection and total internal reflection of light (Average)
- D. All of the above

19. The sky appears blue due to:

- A. Refraction of light
- B. Scattering of light
- C. Diffraction of light
- D. Total internal reflection (Average)

20. Number of colours in a rainbow are:

- A. 6
- B. 5
- C. 7
- D. 9 (Easy)

21. The scientific reason for seeing different colours on soap bubbles is:

- A. Interference of light
- B. Diffraction of light
- C. Polarization of light
- D. Refraction of light (Average)

22. These are the primary colours seen in a rainbow

- A. White, Blue, Red (WBR)
- B. Yellow, Green, Pink
- C. Green, Red, Blue (RGB)
- D. Black, White, Blue (Average)

23. Light propagation in the atmosphere occurs due to
 A. Carbon dioxide
 B. Dust particles
 C. Helium
 D. Water vapour particles (Average)
24. When an astronaut goes up, the sky appears in this colour
 A. Blue B. Black
 C. Red D. White (Average)
25. Your image in a plane mirror is approaching you at 10 cm/s. At what speed is your image approaching you?
 A. 10 cm/s B. 5 cm/s
 C. 20 cm/s D. 15 cm/s (Average)
26. The increasing order of wavelengths for the given colours:
 1. Orange, 2. Blue, 3. Yellow, 4. Violet
 A. 1,2,3,4 B. 1,3,2,4
 C. 4,2,1,3 D. 4,2,3,1 (Difficult)
27. In a rainbow, this colour is between orange and green.
 A. Indigo B. Blue C. Yellow D. Red (Average)
28. The dispersion of light colours in a glass slab occurs due to:
 A. Total internal reflection of light
 B. Diffraction
 C. Dispersion
 D. Reflection (Average)
29. The lens used in microscopes is:
 A. Biconvex lens
 B. Concave lens
 C. Cylindrical lens
 D. Convex lens (Easy)
30. The lens used in binoculars, cameras, astronomical telescopes, and microscopes is:
 A. Convex lens B. Concave lens
 C. Spherical lens D. Cylindrical lens (Easy)
31. Light travels like this:
 A. Curved B. Left
 C. Right D. Straight line (Easy)
32. The image of an object formed in a plane mirror is:
 A. Inverted and real size
 B. Erect and small
 C. Large and erect
 D. Darkened (Average)
33. This mirror shows distant objects as small.
 A. Plane mirror B. Convex mirror
 C. Concave mirror D. Lens (Average)
34. The purpose of light reflection is:
 A. To absorb light B. To scatter light
 C. To turn light D. To destroy light (Average)

35. Light is this type of energy:
 A. Sound energy
 B. Heat energy
 C. Electrical energy
 D. Particle energy (Radiant energy) (Easy)

II. Fill in the blanks with the correct answers:

36. Light spreads in a _____ line.(Easy)
 37. A _____ mirror appears sunken. (Average)
 38. A plane mirror gives a _____ image. (Average)
 39. If the image of an object shows it to the right, in reality, it is in the _____ part. (Average)
 40. Concave mirrors are used in _____.(Average)
 41. A _____ can be used to disperse light into seven colors. (Average)
 42. An image that cannot be obtained on a screen is called a _____.(Average)
 43. An image that can be obtained on a screen is called a _____.(Average)

III. Write True or False for the following statements:

44. A ray of light travels in a straight line path.(Easy)
 45. A concave mirror can form a large and erect image. (Average)
 46. A convex lens always forms a real image. (Average)
 47. If reflected light falls on an object, it can be seen. (Average)
 48. A plane mirror always forms an image of the same size as the object. (Average)
 49. A real image can be obtained using a convex lens.(Easy)
 50. A virtual image can be obtained on a screen.(Easy)
 51. An image can be obtained and enlarged through a convex mirror. (Average)
 52. A large, inverted image can be obtained through a concave mirror. (Average)

IV. Match the column A with the column B: (Difficult)

53.

- | A | B |
|-------------------|----------------------------------|
| 1. Plane mirror | i. Distant object appears small |
| 2. Concave mirror | ii. Change in direction of light |
| 3. Convex mirror | iii. Erect image |
| 4. Reflection | iv. Near object appears large |

54.

- | A | B |
|--------------------|---------------------------------|
| 1. Convex mirror | i. Distant object appears small |
| 2. Plane mirror | ii. Near object appears large |
| 3. Concave mirror | iii. $\angle i = \angle r$ |
| 4. Angle of mirror | iv. Real sized image |

V. Answer the following questions in one word or one sentence:

55. What is the returning of light in a spherical mirror called? (Average)
 56. What is the source of light? (Average)
 57. Which mirror is used as side mirrors in vehicles? (Average)
 58. How can we change the direction of light? (Average)
 59. Which type of mirror forms a real image? (Average)

60. Which type of lens forms a virtual image? (Average)
61. Give one example of a curved mirror. (Average)
62. What is a real image?(Easy)
63. What are the two types of mirrors? (Average)
64. Write one use of lenses. (Average)
65. What is a convex mirror? (Average)
66. What happens when light falls on a shiny or polished surface? (Average)
67. Write one use of a convex mirror. (Average)

VI. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

68. Write the laws of reflection. (Average)
69. What is the use of a mirror? (Easy)
70. Name two uses of a concave mirror. (Average)
71. Why can't we see a candle flame through a bent pipe? (Average)
72. What is light reflection? (Average)
73. When does a rainbow appear in the sky? (Average)
74. We see reflections of trees or buildings in water. Give reason. (Average)
75. Why are concave and convex mirrors called spherical mirrors? (Average)
76. Why is the image formed in a stainless steel plate erect and of the same size as the object? (Average)
77. Write two instances resembling the colours of a rainbow. (Difficult)
78. Tina spins a circular wheel with seven colours equally painted on it very fast. She then sees mostly white colour. What is the reason? (Difficult)
79. What kind of image does the inner part of a spoon form? (Difficult)
80. What are the characteristics of images formed in a plane mirror? (Difficult)
81. Light travels in a straight line path. Explain. (Difficult)
82. In a plane mirror, the right hand appears as the left hand. What is this property called? (Average)
83. Why does the image in a plane mirror show lateral inversion? (Average)
84. Why is a convex mirror used in vehicles?(Average)

VII. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

85. Write the characteristics of a plane mirror. (Difficult)
86. Explain the differences between a convex mirror and a concave mirror. (Difficult)
87. Compare the differences in images formed by plane, convex, and concave mirrors. (Difficult)
88. When light is passed through a concave mirror onto paper, the paper burns. Why? (Difficult)

VIII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

89. Define light reflection and explain with a diagram. (Difficult)

90. Explain how a concave mirror forms an image.

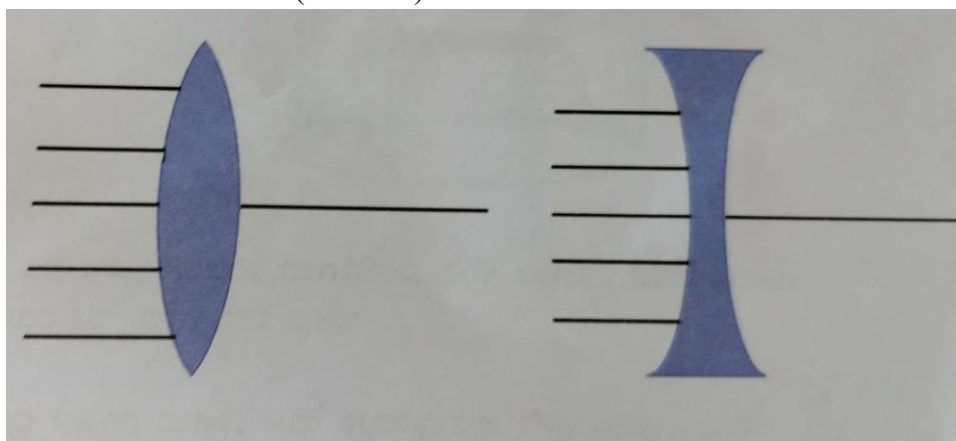
In this picture, a burning candle is placed in front of a plane mirror. Observe the picture and write the characteristics of the image. (Difficult)



91. Write the seven colours of a rainbow in order. (Average)

92. Explain how a real image of the sun can be obtained through a convex lens. (Difficult)

93. The image below shows light rays falling on convex and concave lenses. Complete the diagram to show whether the light rays converge or diverge according to the nature of the lenses. (Difficult)



Numerical Problems:

94. A ray falls at an angle of 40° to the normal. What is the angle of reflection?(Average)

95. If light falls at an angle of incidence of 30° . What is the angle of reflection? (Difficult)

96. If you are standing 2 meters in front of a plane mirror, how far away will the image be? (Difficult)

97. Explain the characteristics of an image when a mirror reflects at a 45° angle, including a diagram.(Average)

98. Angle of incidence = 30° . What is the angle of reflection?(Average)

99. What is the direction of reflection for a ray coming at 45° to the normal? (Difficult)

Unit - 12.
Forests: Our lifeline

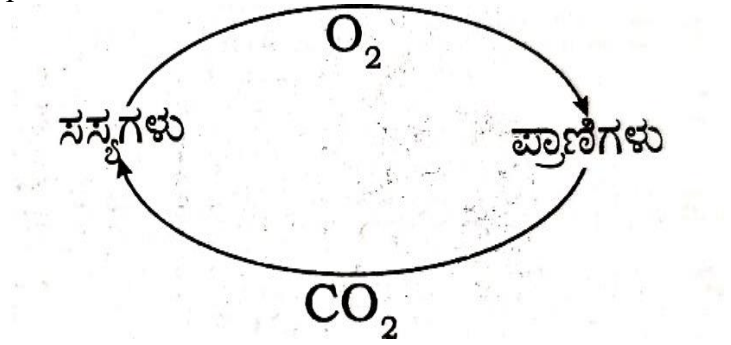
Learning Outcomes:

1. To understand that forests are the lifeline forever.
2. To identify the basic elements of forests.
3. To explain the meaning of food chain and provide examples.
(Example: Plant → Deer → Tiger)
4. To explain the importance of decomposers.
5. To understand the importance of forests in the context of daily life.
(Oxygen production, rain control, climate stability.)
6. To explain the role of forests in maintaining ecological balance.
7. To explain the effects of deforestation.
(Example: Lack of rain, soil erosion, extinction of living beings.)
8. To discuss the necessity of forest conservation.
9. To explain the different layers of a forest.
10. To explain the difference between food chains and food webs.
11. To understand the importance of environmental conservation from a scientific perspective.
12. To understand that forests influence climate, water cycle, and air quality.
13. To know that we get many products from forests.

I. Choose the correct answer from the four options given for each of the following:

1. Forests function in the environment as follows:
 - A. Can maintain cleanliness
 - B. Can increase modernity
 - C. As green lungs and water purification system
 - D. Increase pollution (Average)
2. The current consequence of decreasing forest cover is:
 - A. Wildlife entering human settlements
 - B. Wildlife living happily
 - C. Increase in wildlife population
 - D. Wildlife disappearing(Average)
3. Which of the following is not a product obtained from trees?
 - A. Catechu
 - B. Marble
 - C. Lac
 - D. Gum(Easy)
4. The branched part of a tree trunk is called:
 - A. Canopy
 - B. Upper layer
 - C. Lower layer
 - D. Tree crown(Easy)
5. The reason for maintaining the balance of oxygen and carbon dioxide in the atmosphere is:
 - A. Forests
 - B. Water
 - C. Air
 - D. Heat (Easy)

6. Many food chains can be seen here:
 A. City B. Forest
 C. Sky D. Village (Easy)
7. The reason forests are called green lungs is:
 A. Providing shelter for wildlife
 B. Not providing oxygen to the atmosphere
 C. Releasing carbon dioxide into the atmosphere
 D. Maintaining the balance of oxygen and carbon dioxide in the atmosphere. (Average)
8. Microorganism that converts dead plant and animal remains into humus:
 A. Earthworm B. Virus
 C. Decomposers D. None of the above (Average)
9. The process happening in this picture:



- A. Balance of oxygen and carbon dioxide
 B. Photosynthesis
 C. Evaporation
 D. Urbanization (Average)
10. Decomposers convert dead plant and animal remains into
 A. Water B. Oxygen
 C. Humus D. Nitrogen (Easy)
11. This is an active living entity full of life and vitality:
 A. Village B. City
 C. Environment D. Forest (Easy)
12. Afforestation means:
 A. Starting factories in the forest
 B. Protecting wildlife
 C. Planting saplings to increase forest area.
 D. All of the above (Easy)

13. The name of the tree in this picture:



- A. Teak
 - B. Silk-cotton tree
 - C. Neem
 - D. Bamboo(Easy)
14. What is the understory layer of a forest called?
- A. Canopy layer
 - B. Shrub layer
 - C. Understory layer
 - D. Middle layer (Average)
15. The process responsible for oxygen production in forests:
- A. Respiration
 - B. Digestion
 - C. Stimulation
 - D. Photosynthesis(Easy)
16. Green snake belongs to this group:
- A. Heterotroph
 - B. Decomposer
 - C. Carnivore
 - D. Autotroph (Easy)
17. Green plants are at this level in the food chain:
- A. Tertiary
 - B. Primary producer
 - C. Secondary consumer
 - D. Quaternary consumer (Average)
18. The type of food chain does a wolf belong to:
- A. Herbivore
 - B. Carnivore
 - C. Omnivore predator
 - D. Producer (Easy)
19. Control of heat and temperature in forests is possible by these:
- A. Vultures
 - B. Trees
 - C. Snakes
 - D. Soil insects (Easy)

II. Fill in the blanks with the correct answers:

20. Forests provide oxygen necessary for _____ respiration. (Easy)
21. Forests help to keep _____ under control. (Easy)

22. _____ recycle elements after death.(Average)
23. Forest organisms have _____ interdependence. (Easy)
24. _____ helps to conserve forest biodiversity. (Easy)
25. _____ is the main source of oxygen for humans.(Average)
26. _____ forest organisms are in balance with the environment. (Easy)
27. Forests protect from _____ erosion. (Easy)
28. _____ helps the forest to grow and regenerate. (Easy)
29. Forests influence the quality of _____, _____, and _____.(Average)
30. _____ help provide nutrients to plants growing in forests. (Average)

III. Match the column A with the column B: (Average)

31.

A	B
1. Cow	i. Decomposers
2. Tiger	ii. Food makers
3. Decomposers	iii. Herbivore
4. Trees	iv. Carnivore

IV. Answer the following questions in one word or one sentence:

32. At what stage are invisible insects found? (Average)
33. Which organisms play a key role in soil conservation in forests? (Average)
34. What is the role of fungi in the forest? (Average)

V. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

35. Write the difference between producers and consumers. (Average)
36. How do green plants make food? (Average)
37. Write two examples of food chains. (Average)
38. Forests are called "lifeline" - why? (Average)
39. Deforestation reduce rainfall.Justify. (Average)
40. How forests prevent soil erosion? (Difficult)
41. Why oxygen is more in forests? (Difficult)
42. What is the reason for calling forests green lungs? (Difficult)
43. What is the role of forests in increasing groundwater levels? (Difficult)
44. How do forests control noise pollution? (Difficult)

VI. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

45. Give examples of three different biological groups found in forests. (Difficult)

VII. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

46. Write four uses that forests provide to humans.(Average)
47. Explain the role of forests in maintaining ecological balance. (Difficult)
48. Explain the role of forests in the water cycle. (Difficult)
49. Draw and explain the water cycle diagram. (Difficult)

VIII. Answer the following questions: Five-mark questions (Long Answer – 5 Marks)

50. Write an essay on the topic "Forests must be conserved". (Difficult)
51. Write an essay on "The necessity of forest conservation".(Difficult)
52. "Forests are an active living entity full of life and vitality." Explain. (Difficult)

Activity-based questions:

53. Food chain activity: Pea → Insect → Green snake → Eagle

Answer the questions based on this chain:

- a) Who is the primary producer?
- b) Who is the secondary consumer?
- c) Who is the final consumer? (Difficult)

Diagram activity:

54. Provide a conceptual diagram of a forest – identifying trees, birds, animals, soil – everything. (Difficult)

55. Draw a picture of a forest and identify these: rain, root system, water infiltration into the ground. (Difficult)

Mathematical/Data-based question:

56. A forest has 10,000 trees. Each tree releases 100 litres of oxygen per year. What is the total oxygen production? (Difficult)

57. In an area, 25% of the forest has been cut down. If the original mandatory area was 400 hectares, how much forest remains? (Difficult)

Unit - 13.
The story of wastewater

Learning Outcome:

1. To understand the proper recycling of wastewater.
2. To explain the importance of water.
3. To explain the availability of water on Earth.
4. To learn about judicious water use and groundwater.

I. For each of the following, four answers are given; choose the correct one:

1. Wastewater flowing out from here is not a source of waste:
A. Sinks B. Bathroom
C. Toilet D. River (Easy)
2. Water that can be cleaned by removing pollutants:
A. Seawater
B. Wastewater
C. Distilled water
D. All of the above (Easy)
3. The day celebrated worldwide as World Water Day:
A. March 22
B. April 15
C. August 18
D. January 26 (Easy)
4. The process by which pollutants can be removed before water is reused or enters water bodies:
A. Evaporation
B. Rainwater harvesting (Difficult)
C. Water purification
D. Water recharge
5. The process of treating wastewater:
A. Sewage treatment
B. Drinking water treatment
C. River water treatment
D. None of the above (Easy)
6. Sewage water contains:
A. Pollutants
B. Dissolved impurities
C. Floating impurities
D. All of the above (Easy)
7. Daily use of clean water:
A. For bathing
B. For drinking
C. For cooking
D. All of the above (Easy)
8. Alternative system for toilet waste disposal:
A. Pit latrines B. Compost pits
C. Chemical toilets D. All of the above (Easy)

9. The objective of "Swachh Bharat Abhiyan" launched by the Government of India in 2016:
- A. Toilets for everyone
 - B. Sewage disposal
 - C. Improving sanitation in public places
 - D. All of the above (Easy)
10. A disease not spread by water pollution:
- A. Cholera
 - B. Typhoid
 - C. Beriberi
 - D. Polio (Easy)
11. The bacteria that spreads cholera:
- A. *Vibrio cholerae*
 - B. *Salmonella paratyphi*
 - C. Protozoa
 - D. *Mycobacterium* (Easy)
12. Method of separating large objects in a wastewater treatment plant:
- A. Passing wastewater through bar screens
 - B. Passing through tanks to separate grit and wood
 - C. Allowing water to settle in a large tank with a sloping bottom
 - D. Blowing air into the wastewater (Average)
13. Reason for blowing air into clarified water in a wastewater treatment plant:
- A. To separate solid impurities
 - B. To promote the growth of aerobic bacteria
 - C. To separate scum
 - D. To remove organic matter (Average)
14. To maintain hygiene in public places:
- A. Not throwing garbage everywhere
 - B. Not spreading garbage
 - C. Disposing of garbage in nearby dustbins
 - D. All of the above (Easy)
15. Reason for the decrease in aquatic plant and animal populations in water:
- A. Nitrogen deficiency
 - B. Hydrogen deficiency
 - C. Deficiency of dissolved oxygen in water
 - D. Chlorine deficiency (average)
16. World Water Day is celebrated on this day:
- A. April 22
 - B. June 22
 - C. March 22
 - D. August 22 (Easy)
17. Water is a _____ substance.
- A. Solid
 - B. Plasma state
 - C. Gaseous
 - D. Compound (Easy)

18. Approximate percentage of Earth's surface covered by water:
 A. 90% B. 10%
 C. 27% D. 71% (Average)
19. The scientist who proved that water is a compound:
 A. Henry Cavendish
 B. Lavoisier
 C. Robert Boyle
 D. Robert Hooke (Average)
20. Water density is maximum at this temperature:
 A. 4°C B. 0°C to 4°C
 C. 5°C to 0°C D. 100°C (Average)
21. Pure (rain) water does not contain:
 A. Salts B. Minerals
 C. Ions D. None of the above(Average)
22. Which water is in the purest form?
 A. Well water B. Mineral water
 C. Distilled water D. Rainwater(Average)
23. Amount of potable water on Earth:
 A. 0.6% B. 0.06%
 C. 0.006% D. 6%(Easy)
24. A word not related to the water cycle process:
 A. Groundwater B. Agriculture
 C. Evaporation D. Clouds(Easy)
25. Unit for measuring water flow rate:
 A. Microwaves B. Ohmmeter
 C. Degree Celsius D. Cusecs(Easy)
26. The most important reason for groundwater level depletion:
 A. Deforestation B. Agricultural activities
 C. Evaporation D. Drought(Easy)
27. Which of the following forms is not found when water circulates through the water cycle?
 A. Solid form B. Plasma form
 C. Liquid form D. Gaseous form(Easy)
28. Method that can be used in your school to recharge groundwater with rainwater:
 A. Contour farming B. Drip irrigation
 C. Rainwater harvesting D. Drilling borewells(Average)
29. Infiltration means:
 A. Process of water flowing over the ground
 B. Process of water seeping into the ground
 C. Process of absorption in the top layer of the ground
 D. Process of water standing on the ground (Average)
30. Water collected between rocks below the groundwater level is called:
 A. Groundwater B. Condensation
 C. Evaporation D. Aquifer (Easy)

31. The process of adding substances that pollute water to water is called:
A. Soil pollution
B. Water pollution
C. Aquatic animal nutrition
D. Environmental conservation(Easy)
32. Decrease in water content in the body is called:
A. Salinization
B. Desalination
C. Hydration
D. Dehydration(Easy)
33. Reason for ice floating on water:
A. Density of ice is greater than density of water
B. Density of ice is less than density of water
C. Both a and b
D. None of the above(Average)
34. Simple method of purifying fresh water:
A. Chlorination
B. Fluorination
C. Aeration
D. Filtration
35. The statement "Only people living in rural areas face the problem of water scarcity" is:
A. True
B. False
C. Sometimes false
D. Sometimes true(Easy)
36. A source from which water is obtained from a borewell or the ground is called:
A. Pumpwell
B. Groundwater
C. River
D. Lake(Easy)
37. Choose the correct one: Total water
A. Remains stable in the world's lakes and rivers.
B. Remains stable underground.
C. Remains in seas and oceans.
D. Remains stable throughout the world.(Average)
38. Main reason for arsenic chemical contamination in water:
A. Acid rain
B. Use of fertilizers
C. Excessive rain
D. Drought(Easy)
39. Drip irrigation system means:
A. Using water sparingly
B. Pouring water haphazardly
C. Using water indiscriminately
D. Not using water (Average)
40. A disease not spread by contaminated water:
A. Typhoid
B. Vomiting and diarrhea
C. Cholera
D. Asthma(Easy)
41. Contaminated water means:
A. Water flowing in a river
B. Rainwater
C. Water oozing from a broken tap
D. Water contaminated with dirty substances from washing clothes(Easy)
42. Which of the following is not a reason for water scarcity?
A. Rapid industrial growth
B. Population increase
C. Heavy rainfall
D. Improper management of water resources(Average)

43. The year villagers decided to undertake rainwater harvesting in collaboration with a non-governmental organization:
 A. 1989 B. 1982
 C. 1984 D. 1988 (Average)
44. Traditional methods of collecting rainwater:
 A. Borewells B. Tanks
 C. Rainwater harvesting D. Pits(Easy)
45. Complete the slogan: Our water, our _____
 A. Lifeline B. Success
 C. Failure D. Fatigue (Easy)
46. We store the maximum amount of Earth's water here:
 A. Oceans B. Rivers
 C. Lakes D. Glaciers and ice caps(Average)
47. When the processes involved in the water cycle are written in the correct order:
 A. Precipitation, Condensation, Evaporation
 B. Evaporation, Precipitation, Condensation
 C. Evaporation, Condensation, Precipitation
 D. Condensation, Precipitation E. Precipitation, Evaporation, Condensation(Difficult)
48. The stage of the water cycle that involves water falling from clouds to Earth:
 A. Condensation B. Evaporation
 C. Sublimation D. Precipitation(Average)
49. Common process used to remove pollutants in a wastewater treatment plant:
 A. Evaporation B. Combustion
 C. Filtration D. Freezing (Average)
50. Common waterborne disease found in India:
 A. Cholera B. Diarrhea
 C. Hepatitis D. Dysentery(Average)
51. The primary purpose of a wastewater treatment plant:
 A. To generate electricity
 B. To extract minerals from wastewater
 C. To treat and purify water for reuse or safe disposal
 D. To collect and store wastewater(Average)
52. Infiltration is:
 A. The process of water entering the soil
 B. The movement of water on the ground surface
 C. The process of water evaporating from the soil
 D. The process of water flowing in rivers(Average)
53. An aquifer is:
 A. A type of cloud formation
 B. An underground layer of rock or sediment that holds groundwater
 C. Surface water sources like lakes or rivers.
 D. The process of water absorption by plant roots(Difficult)

II. Fill in the blanks with the correct answers:

54. The process of removing pollutants from water is called -----.(Average)
55. Sludge or sediment contains ----- water. (Average)
56. World Water Day is celebrated on -----.(Average)
57. The easiest method to purify fresh water is-----.(Average)
58. The method of adding substances that pollute water to water is called-----
.(Average)
59. Water purification is a process of separating -----.(Average)
60. Wastewater released from homes is called -----.(Average)
61. Dried ----- is used as fertilizer.
62. Sewers are clogged by -----and -----.(Average)

III. Answer the following questions in one word or one sentence:

63. Is there any way to reuse wastewater? Explain. (Average)
64. What is sewage water? (Average)
65. What can be done to manage the use of fresh water and the disposal of wastewater?
(Average)
66. Does rainwater also contribute to wastewater? Explain. (Difficult)
67. What is the difference between water before and after treatment? (Difficult)
68. What can we do with the water obtained after sewage treatment? (Difficult)
69. How can we disinfect water? (Average)
70. What is the purpose of aeration? (Difficult)
71. What happens if we throw waste into water sources? (Difficult)
72. List three commonly found household items that can be reused instead of being
thrown away. (Difficult)
73. How can we dispose of electronic waste (e-waste)? (Difficult)
74. What is the relationship between hygiene and diseases? (Difficult)
75. Why is it important to practice good hygiene habits at home? (Difficult)
76. What is a common waterborne disease found in India?(Average)

IV. Answer the following questions in two-three sentences: (Short Answer – 2 Marks)

77. What is wastewater?(Average)
78. What are other types of waste materials you encounter in your daily life? (Average)
79. What are some common impurities found in sewage water? (Average)
80. How can impurities in sewage water be categorized? (Difficult)
81. What are sewers? (Average)
82. What are the environmental consequences if sewage water is not properly treated
before being released into natural water bodies? (Difficult)
83. How can we individually reduce sewage waste? (Difficult)
84. Why should cooking oil and fats be avoided from being poured into drains?
(Difficult)
85. What are other waterborne diseases that can arise if hygiene practices are not
followed? (Difficult)
86. Why is it important to eliminate open defecation (especially near water sources)?
(Difficult)

V. Answer the following questions in three-four sentences: (Brief Answer – 3 Marks)

- 87. What is the necessity of sewage pipes?(Average)
- 88. Why is it important to reduce waste at home? (Difficult)
- 89. Which household items, when thrown/released into water sources, pollute ? (Difficult)

VI. Answer the following questions in four-five sentences: (Short Essay – 4 Marks)

- 90. What are the steps involved in sewage treatment? (Difficult)
- 91. How can we reduce household waste entering into sewage water? (Difficult)
- 92. List the main goals of the Swachh Bharat Abhiyan. (Difficult)

Model Answers:

Unit - 1. Nutrition in Plants

Question Number	Answer according to the question	Marks
I. MCQ s		
1	A Plants	
2	C Leaves	
3	D Oxygen	
4	A Solar energy	
5	A Cuscuta	
6	D Algae	
7	A Chlorophyll	
8	B Saprophytic nutrition	
9	C Cuscuta	
10	C Pitcher plant	
11	A Saprophytic nutrition	
12	B Nitrogen	
13	A Rhizobium	
14	B Carbohydrates	
15	A True, B True, C True	
16	B Autotrophs	
17	A Starch	
18	A Chlorophyll	
19	D Carbon dioxide and Oxygen	
20	B Cell	
21	A Stomata	
22	B Leaf	

- 23 C Leaf
24 A Desert
25 D Transpiration
26 B Stomata
27 B Pitcher plant
28 A Algae

II. Match the following:

- 29 1 – B, 2 – C, 3 – A, 4 – D, 5 - E
30 1 - C, 2 - D, 3 - A, 4 - B

III. Write the related words

- 31 Chlorophyll, Autotroph, Photosynthesis
32 Pitcher plant, Cuscuta, No autotrophic nutrition
33 Water, Light, CO₂, Chlorophyll

IV. Fill in the blanks

- 34 Carbon dioxide
35 Pitcher plant
36 Oxygen
37 Light
38 Photosynthesis
39 Chlorophyll
40 Heterotrophic nutrition

V. True/False

- 41 True
42 False
43 False

44	True
45	False
46	False
47	True
48	False
49	True

VI. one sentence answers:

- 50. Plants use carbon dioxide gas to prepare food.
- 51. Oxygen is released as a byproduct in photosynthesis.
- 52. Cuscuta is a green plant – False, it is a non-green parasitic plant.
- 53. The pitcher plant is a parasitic plant.
- 54. The process where two different organisms live together for mutual benefit is called symbiosis.
- 55. The process by which organisms absorb liquid or semi-liquid food from the upper surface of their body is called saprophytic nutrition.
- 56. Examples of insectivorous plants: Nepenthes (Pitcher Plant), Drosera.
- 57. Lichens prepare food by performing photosynthesis through their green leaves.
- 58. The bacteria that help plants absorb nitrogen is Rhizobium.
- 59. Algae are green in colour because they contain chlorophyll.

VII. Answer in two-three sentences:

- 60. The process by which plants prepare food with the help of sunlight, water, carbon dioxide, and chlorophyll is called photosynthesis.
- 61. Chlorophyll is a green pigment present in plant leaves that helps absorb sunlight and plays a crucial role in the process of photosynthesis.
- 62. It is a non-green plant that cannot prepare its own food. It grows on other plants and obtains food from them. For this reason, it is a parasitic plant.
- 63. Chlorophyll is a chemical substance responsible for the green color of plants, and it helps in absorbing light energy during photosynthesis.
- 64. Sunlight, water, carbon dioxide, chlorophyll.
- 65. Because plants prepare their own food using light, water, and carbon dioxide.

66. It does not have chlorophyll and cannot perform photosynthesis; therefore, it is a parasitic plant.

VIII. Answer in three-four sentences:

67. Essential elements:

- Sunlight
- Water
- Carbon dioxide
- Chlorophyll Products:
- Food (Glucose)
- Oxygen

68. Autotrophic Plants

Heterotrophic Plants

Prepare their own food

Grow on other plants and obtain food

Have green pigment (chlorophyll)

Have no or very little chlorophyll

Ex: Green plants

Ex: Pitcher plant, Cuscuta

69. Non-green plants do not have chlorophyll → Photosynthesis is not possible. These grow on other plants and obtain nutrients from them. They follow parasitic or rare modes of nutrition. Ex: Pitcher plant, Cuscuta, etc.

70. Light plays a very important role in photosynthesis. Plants absorb sunlight through chlorophyll. This light energy provides energy for the chemical changes of water and carbon dioxide. This produces glucose (food) and oxygen.

IX. Answer in four-five sentences:

71. Photosynthesis is the process by which green plants prepare their own food with the help of sunlight. For this process:

- Green pigment (chlorophyll)
- Water (from the soil)
- Carbon dioxide (from the air)
- And sunlight are needed. In this process, plants produce glucose (food) and oxygen. General equation: $\text{CO}_2 + \text{H}_2\text{O} \rightarrow (\text{Sunlight}) \rightarrow \text{Food (C}_6\text{H}_{12}\text{O}_6) + \text{O}_2$

72. The pitcher plant is a heterotrophic plant. Its leaves are modified into a pitcher shape, and the sticky substance inside attracts insects, helps trap them, and allows the plant

to consume them. This plant is considered an insectivorous plant because it captures and eats insects to obtain protein and other nutrients along with food.

73. Cuscuta plant cannot perform photosynthesis. It grows on its host plant and absorbs its sap. It obtains food through its own roots via the host plant.
74. Light, especially sunlight, plays a crucial role in photosynthesis. With the help of light energy, water and CO_2 react. This leads to the production of glucose (sugar). Without light, this process is not possible. Light $\rightarrow$ is converted into chemical energy.
75. Insectivorous plants usually grow in soils that are naturally deficient in nitrogen. They use their special leaves to attract insects and firmly close around them. After this, they release digestive enzymes to digest these insects and absorb nitrogen and other nutrients from them. In this way, plants fulfill their required nutrients.

X. Long Answer – 5 Marks:

76. In the process of photosynthesis, green plants use sunlight to prepare food (glucose) from water and carbon dioxide. In this process, oxygen is produced. Essential elements:
- Sunlight
 - Water
 - Carbon dioxide
 - Chlorophyll
 - Products:
 - Glucose
 - Oxygen
- Equation: $6\text{CO}_2 + 6\text{H}_2\text{O} \xrightarrow{\text{Sunlight}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ Diagram: (Can draw a simple diagram)
- CO_2 entering the leaf
 - Water flowing upwards from the ground
 - Sunlight falling
 - Oxygen being released
77. If there were no light, plants would not be able to prepare food. Animals and humans would suffer without food. There would be no oxygen production. The level of carbon dioxide in the air would increase. Destruction of organisms in the environment.
78. (Creative writing): I used to attract insects. Insects flying into my pitcher-shaped leaf would fall in and get trapped. I would then dissolve those insects with biological fluids and absorb the nutrients. This process provided me with protein in my diet. Although I am a green plant, I am not fully autotrophic.
79. Plants prepare their own food – they are the source of food. Animals and humans all depend on plants. Oxygen release through photosynthesis – essential for respiration. Use of carbon dioxide – environmental balance. Without plants, the food chain would be broken.

80. Food source: Plants → Grains, fruits, vegetables. Animals → Depend on plants → Human dependence. Oxygen → For respiration. CO₂ level control. Environmental conservation. Life is impossible without plants.

Unit: 2, Nutrition in animals

I. Objective type Questions

1. D All of the above
2. D All of the above
3. A Carbohydrates
4. A Small intestine
5. C Liver
6. C iii, i, v, ii, iv
7. C Rumen
8. A Pseudopodia
9. D Cellulose
10. A Absorption
11. B Kills many harmful bacteria mixed with food in the stomach.
12. A Villi
13. B Milk teeth
14. A Digestive
15. B Vacuole
16. A Heterotrophs
17. B Liver
18. D 1-iv, 2-ii, 3-i, 4-iii
19. C Liver

- 20. B 1-v, 2-i, 3-iv, 4-ii, 5-iii
- 21. B Anus
- 22. D Small intestine
- 23. C Large intestine
- 24. C Liver
- 25. C Bacteria
- 26. True/False: A False, B True, C True, D True
- 27. A Small intestine B Large intestine

II. Answer in one sentence:

- 28. Animals that eat plants directly are called herbivores.
- 29. Animals that depend on other animals for food are called carnivores.
- 30. Yes. Because a rabbit is an animal that eats plants directly.
- 31. The process by which complex components of food are broken down into simpler substances is digestion.
- 32. Butterfly, honeybee, etc.
- 33. Nectar from flowers.
- 34. The process of taking food into the body is called ingestion.
- 35. Humans, cats, dogs, etc.
- 36. Yes. A bear is an omnivore because it depends on both plants and animals for food.
- 37. Ingestion, Digestion, Absorption, Assimilation.
- 38. Salivary gland.
- 39. Milk teeth, Permanent teeth. *Incisors *Canines *Premolars *Molars
- 40. Liver.
- 41. Stomach.
- 42. The process by which digested food passes into the blood vessels in the wall of the intestine is absorption.
- 43. Bile.
- 44. Gallbladder (Bile).
- 45. Finger-like structures in the small intestine are called villi.
- 46. Small intestine.
- 47. Hydrochloric acid.

48. Length of small intestine --- 7.5 m. Length of large intestine --- 1.5 m.
49. The length of the esophagus depends on human height. In adults, its length is approximately – 25 to 30 cm.
50. The esophagus helps transport food from the mouth to the stomach.
51. Egestion.
52. Liver.
53. Herbivores, ruminant animals.
54. Rumen.
55. Cow, buffalo, deer, ox, goat, sheep, giraffe.
56. Caecum.
57. No. Because the human digestive system lacks the necessary parts to digest cellulose and cannot digest cellulose. Therefore, it is not digested.
58. Organisms that cannot be seen with the naked eye and can only be seen with the help of a microscope are called microorganisms.
59. Organisms that have only a single cell are called unicellular organisms.
60. Food is digested in the food vacuole.
61. When Girish eats food in a hurry, food particles may enter the windpipe, causing hiccups due to a malfunction in the movement of air and food.
62. A microscope is a device that helps to view microscopic organisms and structures that are not visible to the naked eye, by magnifying them.

III. Answer in two-three sentences:

63. Nutrition in animals is the process of consuming food, digesting it, and obtaining the necessary energy and nutrients for the body. Its two main objectives are:
 - To provide energy to the body.
 - To aid in body growth and repair.
64. Digestion is the process by which animals break down complex food substances into simpler, soluble forms. Its main stages are: Ingestion, Digestion, Absorption of nutrients, and Egestion.
65. Animals return partially digested food in small lumps to their mouth and chew it again. This process is called rumination or chewing the cud.
66. The tongue helps us to speak. It helps in chewing food, mixing it with saliva, and swallowing food. It also helps in detecting various types of tastes.
67. Esophagus, Stomach, Small intestine, Large intestine, Anus.

68. These are finger-like structures that increase the inner surface area of the small intestine. They play a very important role in absorbing nutrients from food and transporting them to the blood with the help of blood vessels.
69. a. Carbohydrates ----- Glucose (sugar) b. Proteins ----- Amino acids c. Fats ----- Fatty acids and Glycerol
70. Diagram: Cell membrane, Nucleus, Vacuole, Pseudopodia.
71. Naming: A - Amoeba B - Cow C - Pseudopodia D - Cellulose E - Teeth F - Tongue G - Acid (Digestive juice) H - Liver I - Villi J - Large intestine

IV. Answer in three-four sentences:

72. Villi, which are finger-like structures inside the small intestine, aid in nutrient absorption.
73. Types of teeth:
1. Sharp teeth → Incisors (front)
 2. Flat sharp teeth → Canines (side)
 3. Flat teeth with ridges → Premolars
 4. Large, grinding teeth → Molars
- Names of teeth: Front teeth – Incisors Sharp teeth – Canines Middle flat teeth – Premolars Last large grinding teeth – Molars
74. Diagram: Identify the parts.
75. Digestive system of ruminant animals: Draw a diagram. Identify the parts: Mouth, Esophagus, Four chambers, Rumen, Small intestine, Large intestine.
76. Stages of Human Nutrition:
1. Ingestion ↓
 2. Digestion ↓
 3. Absorption ↓
 4. Assimilation ↓ Egestion

Unit-3 Heat

I. Objective type Questions

1. A Iron ball floats on water.
2. C Copper is stain-resistant, a better conductor than steel.
3. A Dark-colored clothes absorb more heat than light-colored clothes.
4. A Temperature
5. B Laboratory thermometer
6. C Both bodies have the same temperature.
7. C Low temperature
8. C Water
9. C To protect the house from fire accidents
10. C To keep the building cool
11. D Expansion
12. A Heat transfer from the pan to the surroundings
13. D To prevent the heat of the pan from touching the hand
14. B Conduction
15. D Aluminium
16. B To allow sea breeze to enter
17. B Wind blowing from the sea towards the land
18. C Land heats up faster than the sea
19. C Radiation
20. B Convection
21. C Radiation
22. C Radiation
23. A Upward heat convection
24. B Convection
25. B Hollow bricks keep the house cool.
26. B White colour reflects sun rays to keep cool.
27. B Wool keeps the body warm.

- 28. C 1-Convection, 2-Conduction, 3-Radiation
- 29. B Thermometer
- 30. B Clinical thermometer
- 31. D 35°C to 42°C
- 32. A 37°C
- 33. D -10°C to 110°C
- 34. B Mercury
- 35. C Glass
- 36. A Degree Celsius
- 37. D At -40°C
- 38. D 32°F
- 39. C Alcohol
- 40. C Heat from the sun
- 41. B Air
- 42. B Thermometer
- 43. C Skin
- 44. B Conduction

II. Match the following

- 45. 1- C, 2- A, 3- D, 4- B
- 46. 1 – B, 2 – C, 3 – D, 4 - A

III. Fill in the blanks:

- 47. Degree Celsius ($^{\circ}\text{C}$)
- 48. Temperature
- 49. Thermometer
- 50. Heat current
- 51. Conduction
- 52. Convection
- 53. Land Breeze

54. Silver

IV. True/False:

55. False

56. True

57. False

58. False

V. Answer in two-three sentences:

59. The three modes of heat transfer are: Heat conduction, Heat convection, Heat radiation.

60. Steel, being a good heat conductor, dissipates heat well. Paper cups are heat insulators, so heat dissipation is low.

61. A clinical thermometer is designed to measure temperatures only from 35°C to 42°C. In a laboratory, temperatures can be much higher. Therefore, a clinical thermometer is not suitable for measuring temperatures in the required range. Hence, it is convenient only for measuring temperatures in a limited range.

62. A clinical thermometer measures temperatures in the range of 35°C to 42°C, while a laboratory thermometer measures a wide range of temperatures (e.g., -10°C to 110°C).

63. White color reflects light and heat. This helps to keep the internal temperature of the house low in hot regions. Black or dark colors absorb more heat. Therefore, using white color can reduce the temperature to some extent.

VI. Answer in three-four sentences:

64. It has a narrow glass tube. At one end, there is a glass bulb filled with mercury. Outside, there is a small shining thread of mercury, which indicates the amount of heat through a scale on the tube.

65. A clinical thermometer is used to measure body temperature. Normal body temperature is 37°C or 98.6°F. The thermometer is placed under the tongue or in the armpit.

VII. Answer in four-five sentences:

66. Conduction: Heat transfer in solids. Example: A metal spoon getting hot in fire. Convection: Heat transfer in liquids and gases. Example: Hot water rising when boiling water. Radiation: Heat transfer without the help of a medium. Example: Sun's heat reaching the Earth.

67. Heat conductor: Transfers heat well. Examples: Metals (bronze, silver, copper). Heat insulator: Prevents heat transfer. Examples: Wood, plastic, rubber.

VIII. Five-mark questions:

68. Heat: A form of energy, which is energy that can be transferred during the process of temperature decrease or increase. Temperature: The degree of hotness or coldness of an object. Example: Even if a pan and a large vessel have the same temperature, the large vessel will contain more heat.
69. Conduction: Heat transfer in solids. Example: A metal spoon getting hot in fire. Convection: Heat transfer in liquids and gases. Example: Hot water rising when boiling water. Radiation: Heat transfer without the help of a medium. Example: Sun's heat reaching the Earth.

Unit-4 Acids, salts and salts

I. Objective type Questions:

1. D Hydrochloric acid
2. A Lichen
3. B Bitter
4. C Phenolphthalein
5. C Vinegar
6. C Both A and B
7. B Dark pink and green
8. D Hydrochloric acid
9. B A-4 B-3 C-2 D-1
10. A Milk of magnesia is a base
11. C Sodium bicarbonate
12. A Salt and water
13. D Soap solution
14. D They have a crystalline property
15. A H_2O

16. B Vitamin C
17. D 1 and 3 only
18. B Window cleaner
19. C Slaked lime
20. C Both A and B can be used
21. A Acidity increases.
22. A Turns blue.
23. B Neutralization
24. D Formic acid
25. B Red
26. A. Red
27. C. Acid + Base
28. C) Soda lime
29. A. Litmus
30. A. OH^-
31. D. Fruit juices
32. D. Heat release

II. Fill in the blanks:

33. Citric acid
34. Natural
35. Base
36. Tartaric acid
37. Salt
38. Lichens
39. Red
40. Sodium chloride
41. Red
42. Vitamin C

III. Match the following:

43. 1 – iii, 2 – i, 3 – iv, 4 – ii

44. 1 – ii, 2 – iv, 3 – i, 4 – v, 5 – iii

45. 1 – iv, 2 – iii, 3 – i, 4 – v, 5 – ii

IV. True/False, and correct the false statements:

46. False – River water is neutral in nature.

47. True

48. False – Neutralization is a reaction between an acid and a base.

49. False – Limewater turns red litmus blue.

50. False – Turmeric is a natural indicator.

51. False – Common salt is a salt.

52. False – Acids in acid rain: Sulfuric and Nitric acids.

53. False – Curd contains lactic acid.

54. False – Excessive fertilizers increase soil acidity.

55. False – Vitamin C, Ascorbic acid.

V. Answer in one word or one sentence:

56. Yellow-colored indicator

57. HCl

58. Acidic substance

59. Sodium chloride

60. Lichens

61. Base

62. Acetic acid

63. Calcium hypochlorite

64. Calcium hydroxide

VI. Answer in two-three sentences:

65. Salt is formed by the combination of an acid and a base. E.g.: $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

66. Substances that indicate the nature of a solution are indicators. E.g.: Litmus, Turmeric.

67. Acids contain H^+ ; bases contain OH^- .

68. Litmus, Turmeric.

69. Soap has a basic nature, which changes the color of turmeric to red.

70. Adding acid to water is safe; conversely, due to heat, an explosion might occur.
71. In a base, the color of turmeric turns red.
72. Acid turns litmus paper red.
73. Neutralization is a reaction that produces heat.
74. It is a color-changing substance obtained from plants.
75. It is a salt produced by the reaction of an acid and a base.
76. Acid: Lemon juice, orange juice, curd, vinegar; Base: Baking soda, soap solution.
77. Acid: Vinegar, lemon juice; Base: Baking soda, borax.
78. Acid rain is rain in which acids are mixed in the atmosphere.
79. Litmus paper can be used.
80. Test using litmus – if blue paper does not turn red, it is a base.
81. Lemon juice – Citric acid; Curd – Lactic acid; Tamarind – Tartaric acid; Spinach – Oxalic acid.
82. Boric acid; Carbonic acid.
83. Salt – NaCl; Baking soda – NaHCO₃.
84. Lemon juice – acidic; Limewater – basic; different in taste.
85. (i) Ammonia (ii) Magnesium hydroxide
86. Sulfur dioxide, Nitrogen dioxide.

VII. Answer in three-four sentences:

87. Natural indicators are obtained from plants; synthetic indicators are artificially prepared. E.g.: Litmus – natural, Phenolphthalein – synthetic.
88. Acid + Base → Salt + Water. E.g.: $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$.
89. Phenolphthalein is colorless in acid, pink in base.
90. Acidity means high H⁺, antacids are bases that provide OH⁻.
91. When an ant bites, acid is released; calamine (zinc carbonate) neutralizes it.
92. Waste liquids may contain acid/base – they should be neutralized before being discharged into the river.

VIII. Answer in four-five sentences:

93. Acid: Contains H⁺. Sour taste; Base: Contains OH⁻, bitter taste.
94. Acidity – hydrochloric acid; Toothpaste (base); Fruit juice (acid).
95. Salt – food salt, preservative chemical, used as an electrolyte.

96. Litmus is obtained from lichens; experiments can be done to change color.
97. $\text{Acid} + \text{Base} \rightarrow \text{Salt} + \text{Water}$; Uses – food, medicine, industry.
98. Toothpaste – base, neutralizes tooth acidity; Calamine when an ant bites – neutralizes it.
99. A – Neutral; no color change
B – Base; red litmus $\rightarrow$ blue
C – Acid; no change in red litmus
D – Neutral

IX. Five-mark questions:

100. Acids: Stomach digestion, food taste; Harm: corrosion. Bases: Cleaning agents; Harm: rapid chemical reactions. Salts: Food, kitchen, industry; Harm: excessive consumption is not good.
101. $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$ Neutralization reaction: Acids and bases react to produce salt and water.
102. Acids: Give H^+ . E.g.: HCl.
Bases: Give OH^- . E.g.: NaOH.
Indicators: Show the nature of the solution. E.g.: Litmus.

Unit-5 Physical and chemical changes

I. Objective Questions:

1. B Physical change
2. D Melting of ice
3. B Chemical change
4. A A new substance is produced.
5. D All of the above
6. D All of the above
7. B Chemical change
8. A Calcium carbonate
9. B Physical change
10. C 1-iv, 2-iii, 3-ii, 4-i
11. A Fe_2O_3
12. B Statement 2 is correct.
13. B Evaporation
14. B. Carbon dioxide
15. C. Iron, Carbon, Chromium, Nickel
16. D. All of the above
17. A. Air humidity is low in deserts.
18. B. Copper
19. B. ii and iii
20. D. All of the above
21. B. Chemical change
22. C. Turning water into ice
23. B. Magnesium
24. C. Chemical change
25. C. Physical change
26. C. Chemical change
27. C. Stainless steel

- 28. B. Chemical change
- 29. B. Magnesium oxide
- 30. A. The pipe has been galvanized.
- 31. C. Only i and iii are correct.

II. Fill in the blanks:

- 32. Physical
- 33. Chemical
- 34. Physical
- 35. Physical

III. Match the following:

- 36. i – 1, ii – 2, iii – 3, iv - 4
- 37. i – 1, ii – 2, iii – 3, iv - 4

IV. State True or False

- 38. False
- 39. False
- 40. True

V. Write as relationship:

- 41. No new property
- 42. Physical change
- 43. Physical change
- 44. Physical change

VI. Answer in one sentence:

- 45. Making water into ice
- 46. Chemical change
- 47. Physical change
- 48. Chemical change

VII. Answer in two-three sentences:

- 49. In physical change, no new substance is formed. In chemical change, a new substance is formed.

50. Even if salt dissolves in water, the salt can be recovered again when boiled. Therefore, this is a physical change.
51. Change of state; No new substance is formed; Reversible change.
52. The copper sheet turns green. By reacting with oxygen, a new substance is formed as a result. This makes it a chemical change.
53. When paper burns, new substances like smoke and ash are formed. Therefore, this is a chemical change.
54. Soap making is a process where a new substance is produced through the reaction of various chemicals.
55. Coastal areas have high humidity. Therefore, the rate of rusting increases due to moisture in contact with iron.
56. $\text{Ca(OH)}_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 \downarrow + \text{H}_2\text{O}$

VIII. Answer in three-four sentences:

57. Turning water into ice. Making sugarcane juice from fresh sugarcane. Salt dissolving in water.
58. Burning paper. Fruit rotting. Soap making.
59. When salt dissolves in water, the salt mixes with the water but is not destroyed. If the salt water is boiled and evaporated, the salt becomes available again.
60. Painting; Galvanizing; Applying oil or grease; Galvanizing.
61. Galvanizing is the process of coating a metal with a chemical or element. It helps to prevent rusting. It is most suitable for pipes that are in contact with water.

IX. Answer in four-five sentences:

62. A new substance is formed. Colour change. Heat is produced or released. Odour change, gas release.
63. In physical change, no new substance is formed, whereas in chemical change, a new substance is formed. Physical change is reversible, chemical change is irreversible. Physical change is generally a minor change, but chemical change is permanent. Physical change commonly occurs in daily life, while chemical change occurs under specific conditions.
64. Turning water into ice is a physical change – ice can be turned back into water (reversible). Burning paper is a chemical change – it cannot be turned back into paper (irreversible).

X. Answer to five-mark question:

65. Physical change: A change in the state of a substance occurs, but no new substance is formed. Examples: Turning water into ice Salt dissolving in water

Chemical change: A change where a new substance is formed. Examples: Burning paper Fruit rotting

Unit-6 Respiration in organisms

I. Multiple Choice Questions (MCQs) – Answers:

1. A. Cell
2. D. To break down food
3. C. Carbon dioxide and water
4. D. Glucose without oxygen use -> Alcohol + Carbon dioxide + Energy
5. D. Inhalation
6. B. Exhalation
7. C. (No option text provided, assuming C is the correct answer)
8. A. Fins
9. A. In inhalation our lungs expand and in exhalation they return to their original state as air goes out.
10. D. All of the above
11. A. If physical activity increases, the rate of respiration also increases.
12. D. Wet skin
13. D. Stomata
14. C. Spiracles
15. D. The number of breaths a person takes in one minute.
16. B. Energy production
17. C. Lungs
18. B. Anaerobic
19. A. ATP
20. B. 2

II. Fill in the blanks:

- 21. Water, energy
- 22. Respiration
- 23. Glucose
- 24. Respiration
- 25. Carbon dioxide
- 26. Gills

III. Match the following:

- 27. i – 3, ii – 2, iii – 4, iv – 1
- 28. i – 3, ii – 1, iii – 4, iv – 2

IV. Write as relationship:

- 29. Lungs : Human :: Gills : Fish
- 30. Respiration : Energy :: Food : Nutrition
- 31. ATP : Energy :: Glucose : Food
- 32. Respiration : Oxygen :: Photosynthesis : Carbon dioxide

V. Answer in one word/sentence:

- 33. Oxygen
- 34. Glucose
- 35. Carbon dioxide
- 36. Anaerobic respiration

VI. Answer in two-three sentences:

- 37. ATP means "Adenosine Triphosphate". It is the energy unit.
- 38. In respiration, carbon dioxide, water, and ATP are produced.
- 39. The two types of respiration are: Aerobic (with oxygen) and Anaerobic (without oxygen) respiration.
- 40. Respiration releases energy from food, which is essential for living.
- 41. Fish breathe oxygen in water through gills.
- 42. Yeast performs anaerobic respiration, which produces alcohol.

VII. Answer in three-four sentences:

- 43. Humans take in air through the nose during respiration. The air travels through the trachea and lungs. Oxygen is absorbed into the blood and carbon dioxide is released.

44. In yeast, when oxygen is absent, alcohol, CO₂, and energy are produced from glucose.
45. Yeast releases alcohol and CO₂ from glucose through anaerobic respiration. This produces ATP energy.

VIII. Answer in four-five sentences:

46. Organs involved in respiration: Nose, throat, trachea, lungs. Air enters and oxygen spreads in the blood.
47. Characteristics of respiration: Taking in oxygen, releasing carbon dioxide, production of ATP energy, increase in breathing rate.
48. Respiration = Biological process (food breakdown, energy production), Inhalation-Exhalation = Physical process (air moving in and out).

IX. Five-mark questions:

49. Stages of respiration: Digestion of food Glucose production Release of ATP energy from glucose Release of waste products Importance: Essential for energy production, growth, movement, etc.

50. Comparison:

Elements	Aerobic	Anaerobic
Oxygen use	Yes	No
Products	CO ₂ , water, ATP	Alcohol, CO ₂ , less ATP
Energy amount	More	Less
Example	Human	Yeast

51. Stages: Ingestion and digestion of food Glucose production Breakdown of glucose for energy Creation of energy in the form of ATP Release of waste products (CO₂, H₂O)

Unit – 7 Transport in animals and plants

I. Multiple Choice Questions (MCQs):

- A. Blood
- B. Red blood cells
- B. Platelets
- A. Vein
- A. Pulse rate

6. C. (No option text provided in original)
7. B. Mixture of oxygenated blood with deoxygenated blood
8. C. Stethoscope
9. A. William Harvey
10. A. Sponge
11. C. Carbon dioxide
12. B. Root
13. D. Organ system
14. A. Xylem
15. B. Phloem
16. C. Auricle
17. C. Transpiration
18. B. Stomata
19. B. Ammonia
20. A. Urea
21. C. Kidney
22. B. Dialysis
23. B. Ureter
24. C. Heart
25. B. Water and mineral
26. B. Hemoglobin
27. C. 4
28. C. Blood
29. B. White blood cell
30. D. Red Blood Cell
31. B. Oxygen
32. A. Arteries and veins

II. Fill in the blanks:

33. Thin pipe-like
34. Plasma

- 35. Valves
- 36. Phloem
- 37. Aorta
- 38. Vein
- 39. Xylem
- 40. Haemoglobin
- 41. Plasma

III. Match the following:

- 42. 1 – ii, 2 – i, 3 – iv, 4 – iii
- 43. 1 – ii, 2 – i, 3 – iii, 4 – iv

IV. Answer in one word/sentence:

- 44. Plasma
- 45. Phloem
- 46. 4
- 47. Fighting infections
- 48. Number of heartbeats, rhythmic contraction and relaxation.

V. Answer in two/three sentences:

- 49. Arteries – carry blood from the heart to the body. Veins – carry blood from the body to the heart.
- 50. The heart works to pump blood to all parts of the body. It helps in transporting oxygen, food, and waste products.
- 51. Capillaries facilitate the exchange between blood and tissues. They are very small and have thin walls.
- 52. The excretory system consists of the kidneys, ureters, bladder, and urethra.
- 53. Xylem transports water and minerals from the roots to the leaves in the upward direction only. This is movement against gravity.
- 54. Phloem transports food to all parts of the plant. This is essential for plant growth.

VI. Answer in three/four sentences:

- 55. Xylem: Transports water and minerals, unidirectional movement, composed of dead cells. Phloem: Transports food, bidirectional movement, composed of living cells.

56. In the diagram, blood goes from the heart to body parts through arteries and returns to the heart through veins. Valves control the direction of blood flow.
57. Plasma – liquid part, transports nutrients and waste products. Red blood cells – oxygen transport. White blood cells – fight against pathogens. Platelets – blood clotting.

VII. Answer in four/five sentences:

58. The heart is a vital organ with four chambers. The upper two chambers are atria, and the lower two chambers are ventricles. It pumps blood. Valves ensure the correct direction of blood flow. The heart continuously contracts and relaxes to maintain blood flow.
59. The heart sends oxygenated blood from the left ventricle through arteries to the body. Deoxygenated blood comes to the right atrium through veins. Then it goes from the right ventricle to the lungs, where it receives oxygen. Thus, blood is in a continuous cycle of supply and purification.

VIII. Five-mark questions:

60. Transportation in plants occurs through xylem and phloem. Xylem – transports water and minerals from roots to leaves. Phloem – sends food prepared in leaves to other parts of the plant.

Due to transpiration, water is pulled upwards as it evaporates from the leaves. This is a continuous biological process of movement.

61. Diagram, identifying parts. The heart has four chambers: left and right atria, left and right ventricles. Veins bring blood from body parts to the heart. Arteries send blood from the heart to the body. The regular heartbeat maintains blood circulation. In the diagram, this blood flow pathway can be shown as going from the heart to body parts and to the lungs.

Unit-8 Reproduction in plants

I. Multiple Choice Questions (MCQs):

1. A. Sexual
2. A. Buds in the leaf axils
3. iv. Only one of the above is correct
4. B. Unisexual
5. B. Pistil
6. A. Fruit
7. D. Light
8. B. Yeast
9. C. Fragmentation
10. A. (No option text provided in original)
11. B. Stamen
12. A. Ovule
13. A. Fertilization
14. B. Good yield
15. B. Birds
16. C. Seed

II. Fill in the blanks:

17. Pollination
18. Ovule
19. Vegetative
20. Reproduction
21. Pollination
22. Seed
23. Buds in the margin of leaf

III. Match the following:

24. i – 3, ii – 1, iii – 4, iv – 2
25. i – 4, ii – 3, iii – 2, iv – 1

IV. Answer in one word/sentence:

- 26. Fertilization occurs
- 27. Vegetative reproduction
- 28. Fertilization
- 29. Ovule and pollen grain
- 30. Stamen
- 31. Pistil/Ovary
- 32. Fruit
- 33. Fungus, Fern, Moss
- 34. By fungal spores falling through the air
- 35. Sexual and Asexual
- 36. Part of the stem where a new bud emerges

V. Answer in two-three sentences:

- 37. The process by which pollen grains reach the stigma is called pollination. This is a pre-fertilization stage.
- 38. The pistil is the female part of the plant, consisting of the ovary, style, and stigma.
- 39. Seed dispersal occurs through water, wind, and birds.
- 40. The ovule is the female gamete, and the pollen grain is the male gamete.
- 41. The flower is the main organ for reproduction as it contains male and female gametes.
- 42. Besides asexual reproduction, more seeds can be produced through fruits in the sexual method, leading to new plants.
- 43. Not all flowers turn into fruits because fertilization or pollination might not occur.
- 44. Asexual reproduction can rapidly produce more plants. This is efficient in agriculture for time and labor.
- 45. In Prickly Pear (Opuntia), buds emerge from the joints and grow into new plants.

VI. Answer in three-four sentences:

- 46. Sexual: A new organism is born from the union of male and female gametes. Asexual: A new plant grows from a part of the existing plant itself. Sexual method provides diversity. Asexual method leads to rapid growth.
- 47.

1. Petals – are attractive and attract insects.
2. Stamen – produces male gametes (pollen grains).
3. Pistil – contains female gametes (ovules).

48.

1. From branches – e.g., Rose.
2. From spores – e.g., Fern.
3. From nodes – e.g., Potato.

49. (Draw diagram) The place where the ovule and pollen grain join – the pistil. Fertilization occurs there, and a zygote is formed.

VII. Answer in four-five sentences:

50. During pollination, pollen grains reach the stigma. They travel through the style and enter the ovule. There, the ovule and pollen grain unite and undergo fertilization. Subsequently, the ovule becomes the seed, and the ovary develops into the fruit.
51. After pollination, fertilization occurs. The ovule becomes the seed, and the ovary develops into the fruit. The remaining parts of the flower fall off. This process has the stages: flower → fertilization → seed → fruit. (Can draw a diagram: Flower → Fertilization → Seed → Fruit)
52. (Draw diagram and label parts) A flower mainly has three parts: Petals, Stamen (male part), Pistil (female part). Stamen – Anther (pollen) Pistil – Stigma, Style, Ovary

Unit-9 Motion and Time

I. Multiple Choice Questions:

1. B. Pendulum motion – an example of periodic motion
2. C. Circular motion
3. A. Instrument that measures the distance traveled by a scooter – Odometer
4. B. An example of rectilinear motion – Train movement
5. A. International unit of speed – meter per second (m/s)

6. A. Speed = Distance traveled $\div$ Time taken
7. B. 60 km/h, 20 minutes = $(1/3)$ hour $\rightarrow 60 \times 1/3 = 20$ km
8. C. Total distance = $7 + 12 + 5 + 3 = 27$ m (Not in options - answer is wrong; correct answer needed)
9. B. If returning to the starting point in a circular path $\rightarrow B. 2\pi r$
10. A. A $\rightarrow$ B $\rightarrow$ C (Pythagoras theorem) $\rightarrow \sqrt{5^2 + 12^2} = 13$ m
11. B. Body's speed = distance in less time $\rightarrow$ B. Greater than the body's speed
12. B. Speed = $1200 \div 10 = 120$ km/h
13. A. Low speed means $\rightarrow$ Speed
14. D. Distance-time graph $\rightarrow$ Speed = $12 \div 3 = 4$ m/s
15. A. (No option text provided in original)
16. B. Speed = $120 \div 4 = 30$ km/h
17. D. – Knee
18. D. (No option text provided in original)
19. B. (No option text provided in original)
20. A. (No option text provided in original)
21. B. Generally, measure of motion $\rightarrow$ meter
22. B. Speed = distance $\div$ time
23. B. SI unit of speed $\rightarrow$ meter/second
24. B. Example of uniform motion $\rightarrow$ Clock hand
25. B. Time measuring instrument $\rightarrow$ Clock
26. C. Uniform motion – Distance: Equal
27. B. Picture used to show motion $\rightarrow$ Time-distance graph

II. Fill in the blanks:

28. Motion with direction and distance is called – Velocity
29. 1 hour = 60 minutes
30. Instrument to indicate speed – Speedometer
31. 1 hour = 3600 seconds
32. SI unit of time – Second
33. Speed = Distance $\div$ Time
34. In uniform motion, object – travels equal distance

35. SI unit of speed – meter/second

36. Distance traveled = Speed $\times$ Time

III. Match the following:

37. i. - 3, ii. - 4, iii.- 2, iv. 1

38. i. - 3, ii. - 1, iii. - 4, iv. - 5, v.- 2

IV. Answer in one word/sentence:

39. Formula for calculating velocity: Velocity = Distance $\div$ Time

40. SI unit of time: Second

41. Recurrent motion: Periodic motion

42. Relationship: Velocity = Distance $\div$ Time

43. Example: Clock hand

V. Answer in two-three sentences:

44. Stationary object – an object without motion.

45. Types of motion – Rectilinear, Circular, Periodic.

46. Speed-direction relationship – Velocity has direction. Speed does not have direction.

47. 60 km/h

48. Formula: Velocity = Distance $\div$ Time, Velocity is the rate of distance traveled by a body in a specific time period in a specific direction.

49. Effortless motion -> Correct, continuous motion, covering equal distance in equal time.

50. Speed is an indicator of motion – the amount of motion can be known from speed.

VI. Answer in three-four sentences:

51. Difference between speed and velocity – Speed has magnitude but no direction. Velocity has both magnitude and direction.

52. Three types of motion:

- Rectilinear motion – Train movement
- Periodic – Swing
- Circular – Earth's motion
-

VII. Answer in four-five sentences:

53. Uniform/Non-uniform motion – Uniform: covering equal distance in equal time, Non-uniform: covering different distances in different times.

54. Explain the three types of motion with examples.

55. Velocity calculation:

- 20 minutes = $\frac{1}{3}$ hour
- Velocity = $10 \div (\frac{1}{3}) = 30$ km/h

VIII. Five-mark questions:

56. Average speed of the bus:

$$90 \div 3 = 30 \text{ km/h}$$

57. Importance of time:

- Determining the timing of activities by time.
- Planning for electricity/trains/shop closing, etc.

Mathematical problems:

58. $120 \div 3 = 40$ km/h

59. $60 \times 2.5 = 150$ km

60. 20 minutes = $\frac{1}{3}$ hour $\rightarrow 5 \div (\frac{1}{3}) = 15$ km/h

61. Total distance = $90 + 60 = 150$ km Total time = $2 + 1 = 3$ hours Average speed = $150 \div 3 = 50$ km/h

62. $1.5 \times 10 = 15$ m

Unit-10 Electric current and its effects

I. Multiple Choice Questions:

1. A
2. A
3. B
4. B
5. C
6. B
7. D
8. D
9. A
10. B
11. C
12. C
13. B
14. A
15. B
16. B
17. A
18. C
19. C
20. C
21. C
22. A
23. D
24. D
25. C
26. C
27. B
28. C

29. B

II. Fill in the blanks:

30. Metal filament

31. Heating effect

32. Magnetic effect

33. Melts

34. Heat conductor

III. Match the following:

35. i – 2, ii – 4, iii – 1, iv – 3

36. 1 – iii, 2 – iv, 3 – i, 4 – ii

37. 1 – iv, 2 – iii, 3 – i, 4 – ii

IV. Answer in one sentence:

38. Used in an electric bell.

39. Electric heater.

40. Fuse is used to protect from danger, used in home electrical circuits.

41. Electric heater, electric stove.

V. Answer in two-three sentences:

42. A fuse is used in home electrical circuits or appliances to protect from excess current.

43. Electric heater and electric stove.

44. CFLs contain toxic substances; they can harm the environment.

45. The ISI mark provides quality assurance and safe usage.

46. Electric bulb, phonograph, movie camera, electric generator.

47. When excessive current flows, the fuse filament, having a low melting point, heats up and melts, thereby protecting the circuit.

48. When electricity flows, a magnetic field is created around the wire.

49. Plastic is used as an insulator to prevent electric shock.

50. Nichrome wire has a high melting point, generates high heat, and withstands heat.

VI. Answer in three-four sentences:

51. When a metal wire is wound around an iron nail and connected to a dry cell, an electric current flows, creating a magnetic field.
52. In an electric bell, due to the magnetic effect, the metal strip is attracted and produces sound.
53. Increase the number of turns of the wire, increase the number of batteries, increase the length of the metal object.
54. The fuse wire has a low melting point, so when excessive current flows, it melts and breaks the circuit. (Diagram: Fuse mechanism)

VII. Answer in four-five sentences:

55. If excessive electric current flows, the fuse wire melts due to heat, protecting from danger. It makes the circuit an open circuit, protecting the appliances.
56. Electric heater, stove, iron box, geyser, etc.
57. The three effects of electricity are the heating effect, magnetic effect, and chemical effect. The heating effect enables heaters to function, the magnetic effect powers electric bells, and the chemical effect is seen in electric cells.
58. Nichrome is a heat-resistant metal with high resistance, so it is used in appliances that generate heat.

VIII. Answer to five-mark questions:

59. The three main effects caused by electric current are:
 - Heating effect: The filament gets hot (heater).
 - Magnetic effect: The wire becomes a magnet (electromagnet).
 - Chemical effect: Electricity acts on a salt solution (electric cell).
 - An example for each effect should be given.
60. Experience of making an electromagnet:
 - Materials: Iron rod, insulated wire, battery, switch.
 - Procedure: Wrap the wire around the iron rod and connect the battery. The rod becomes magnetic when electricity flows.
 - Experience: It was possible to attract iron pieces and pins.

Activity-Based Answers:

61. Simple Electromagnet:
 - Materials: Iron rod, wire, battery.
 - Procedure: Wrap the wire around the iron rod and connect it to the battery. Magnetism will be created.

62. Fuse Demonstration:

- Equipment: Battery, fuse wire, bulb, wire, switch.
- Procedure: Connect the fuse in series. The fuse will melt when excessive current flows.

Numerical Problems Answers:

63. Power = 1150W, Voltage = 230V $I = P/V = 1150/230 = 5$ A Answer: Yes, the fuse is sufficient.

64. Heat = $I^2RT = 2^2 \times 10 \times 1 = 40$ Joules

65. $V = 1.5$ V, $I = 0.3$ A, $t = 10$ s Power = $VI = 1.5 \times 0.3 = 0.45$ W Energy = $0.45 \times 10 = 4.5$ Joules

Unit-11 The light

I. Multiple Choice Questions Answers:

1. Always a straight-line path
2. Refraction of light
3. In vacuum
4. Reflection of light
5. 3×10^8 m/s
6. Concave mirror
7. Plane mirror
8. Virtual and erect
9. Convex mirror
10. 3
11. Figure B
12. Sir C.V. Raman published the discovery of the Raman effect.
13. Figure A

14. Figure B
15. Clay
16. Concave lens
17. Diffraction of light
18. All of the above
19. Scattering of light
20. 7
21. Interference of light
22. Green, Red, Blue (RGB)
23. Dust particles
24. Black
25. 20 cm/s
26. 1, 3, 2, 4
27. Yellow
28. Diffraction
29. Convex lens
30. Convex lens
31. In a straight line
32. Erect and real size
33. Concave mirror
34. Bending light
35. Particle energy (Radiant energy)

II. Fill in the blanks:

36. Light travels in a straight line.
37. A concave mirror appears curved inwards.
38. A plane mirror produces a virtual image.
39. If the image of an object is shown on the right, it is actually on the left side.
40. Concave mirrors are used in vehicles.
41. A prism can be used to split light into seven colors.
42. An image that cannot be obtained on a screen is called a virtual image.

43. An image that can be obtained on a screen is called a real image.

III. True or False Statements:

- 44. A ray of light travels in a straight-line path. → True
- 45. A concave mirror can form a magnified and erect image. → False
- 46. A convex lens always forms a real image. → False
- 47. If reflected light falls on an object, it can be seen. → True
- 48. A plane mirror always forms an image of the same size as the object. → True
- 49. A convex lens can be used to obtain a real image. → True
- 50. A virtual image can be obtained on a screen. → False
- 51. An image can be obtained and magnified using a convex mirror. → True
- 52. A magnified, inverted image can be obtained using a concave mirror. → True

IV. Match the following:

- 53. 1 – iii, 2 – iv, 3 – i, 4 – ii
- 54. 1 – ii, 2 – iv, 3 – i, 4 – iii

V. Answer in one word or one sentence:

- 55. Reflection
- 56. Sun
- 57. Convex mirror
- 58. Through a mirror or lens
- 59. Concave mirror
- 60. Convex lens
- 61. Convex mirror
- 62. Image that can be obtained on a screen
- 63. Plane and curved mirrors
- 64. Used in telescopes
- 65. Mirror curved outwards
- 66. Is reflected
- 67. Used as a rear-view mirror in vehicles

VI. Answer in two-three sentences:

- 68. Laws of Reflection:

- The angle of incidence is equal to the angle of reflection.
 - The incident ray, the reflected ray, and the normal drawn at the point of incidence all lie in the same plane.
69. Uses of Mirror: Mirrors are used in daily life for seeing one's face, for grooming, and as rear-view mirrors in vehicles.
70. Two uses of a concave mirror:
- Dentists use them for dental examination.
 - They are used to concentrate sun rays to generate heat.
71. We cannot see the candle flame through a bent pipe. This is because light travels in a straight-line path, so light cannot bend in a curved pipe, and thus the light is not visible.
72. When light falls on a surface and bounces back into the same medium, it is called reflection of light.
73. After rain, when sunlight splits into seven colors in water droplets, a rainbow is formed.
74. The surface of water reflects the surrounding light, showing the images of trees or buildings.
75. These have curvature on their surface and light is reflected, thus they are spherical parts and are mirrors.
76. The plate is flat and smooth, so light is reflected simply, making the image erect.
77. (1) Water sprinkler in a garden. (2) When light falls obliquely on a CD/DVD surface. (3) When light falls on a prism.
78. When colors are mixed at a very high speed, the human eye cannot distinguish them; therefore, white color is seen.
79. The inner surface is a concave surface which shows the image real, magnified, and inverted.
80. The image is real size, erect, and laterally inverted.
81. Yes, light always travels in a straight line.
82. Yes, a plane mirror shows the left hand instead of the right hand. It undergoes lateral inversion.
83. Yes, lateral inversion occurs in a plane mirror.
84. Convex mirrors are used to view distant objects as magnified.

V. Answer in three-four sentences:

- 85. A plane mirror shows the image in real size. The image is erect. Lateral inversion occurs. It is virtual.
- 86. A convex mirror has a bulging curved surface; it shows large objects as small. A concave mirror has an inwardly curved surface. It shows objects in their actual size.
- 87. In a plane mirror, the image is real size and erect. In a convex mirror, the image is smaller. In a concave mirror, the image can appear magnified and inverted.
- 88. A concave mirror converges light rays at a single point. At this focal point, the temperature increases, causing the paper to burn.

VI. Answer in four-five sentences:

- 89. When light falls on an object, it bounces back into the same medium. This is called reflection. The line along which a ray falls on a plane mirror and bounces back is called the reflected ray. (Draw a diagram showing reflection in a plane mirror)
- 90. A concave mirror is curved inwards. If the object is at f , the image is real; if it is far, it is inverted. A concave mirror converges rays.
- 91. The image inside the mirror is of the same size. It is erect and laterally inverted. The image appears parallel to the burning candle.
- 92. In order: Red, Orange, Yellow, Green, Blue, Indigo, Violet.
- 93. A convex lens converges sun rays and provides a real image. If the object is at f , the image is real. This gives an accurate image of the sun on paper.
- 94. Convex lens: Rays converge inwards. Concave lens: Rays diverge outwards. (Draw a diagram showing convex - convergence, concave - divergence)

Mathematical Questions:

- 95. Angle of reflection = 40°
- 96. Angle of reflection = 30°
- 97. Image distance = 2 meters (Total distance 4 meters)
- 98. The image is of the same size, erect, and laterally inverted. (The diagram should show a ray incident at 45° being reflected)
- 99. Angle of reflection = 30°
- 100. The direction of reflection will be 45° to the right (45° from the normal).

Unit-12 Forests: Our lifeline

I. Multiple Choice Questions - Answers:

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

II. Fill in the blanks:

20. Plants
21. Temperature
22. Decomposers
23. Interdependence
24. Forest conservation
25. Tree
26. All

27. Soil

28. Rain

29. Wind, rain, temperature

30. Microorganisms

III. Match the following: 31. 1 – iii, 2 – iv, 3 – i, 4 – ii

IV. Answer in one word/sentence:

32. Saprophytes

33. Tree roots

34. Decomposing debris and recycling

V. Answer in two-three sentences:

35. Producers are those who prepare food; consumers are those who use food.

36. They prepare food using sunlight, water, and carbon dioxide.

37. Grass → Cow → Lion; Plant → Insect → Bird.

38. Forests are a source of shelter, food, and water for living organisms.

39. Without trees, the water cycle gets disrupted, and rainfall decreases.

40. Tree roots hold the soil together.

41. Plants produce oxygen through photosynthesis.

42. Because plants release oxygen.

43. They help increase groundwater levels by allowing water to seep into the soil.

44. Trees absorb sound, thus reducing noise pollution.

VI. Answer in three-four sentences:

45. 1. Plants – Producers 2. Animals – Consumers 3. Microorganisms – Decomposers

VII. Answer in four-five sentences:

46. Food and medicine are obtained.

They provide oxygen. * They maintain rainfall levels. * They protect biodiversity.

47. Forests control temperature, humidity, and air quality. They maintain the balance of life and biological interdependence. They are the source of rain and rivers. They prevent soil erosion.

48. Forests allow rainwater to seep in, increasing groundwater levels. They provide water to rivers and borewells. They prevent soil erosion during the rainy season.

49. (Diagram: Water on Earth → Cloud → Rain → Seeping into ground → River → Sea → Evaporation → Cloud) Explanation: Forests play a major role in the water cycle.

VIII. Five-mark questions

50. Forests provide shelter, food, and oxygen to living organisms. They help in rain, clean air, and soil protection. The destruction of forests disrupts the ecological balance. Therefore, forest conservation is essential.
51. Forests provide biodiversity, clean air, river sources, food, and medicine. Deforestation leads to loss of biodiversity, rainfall shortage, and climate change. Hence, forest conservation is necessary through planting saplings.
52. A forest is a living entity. Here, plants, animals, and microorganisms are interdependent. Biological activities occur through their interaction. This is a true biological system that is essential for our lives.

Activity-Based Questions:

53. a. Pea b. Green snake c. Eagle
54. Diagram-based activity: (Explanation: Identify trees, birds, lions, soil, and insects in the picture)
55. (In the diagram: Rain – water falling from clouds; Root system – roots penetrating the ground; Water seepage into the ground – show the path of water)

Mathematical Questions:

56. $10000 \times 100 = 10,00,000$ liters of oxygen
57. $25\% \text{ of } 400 = 100$; Remaining = 300 hectares

Unit-12 The story of wastewater

I. Multiple Choice Questions - Answers:

1. D
2. B
3. A
4. C
5. A
6. D
7. D

- 8. D
- 9. D
- 10. C
- 11. A
- 12. A
- 13. B
- 14. D
- 15. C
- 16. C
- 17. D
- 18. D
- 19. B
- 20. A
- 21. D
- 22. C
- 23. B
- 24. B
- 25. D
- 26. A
- 27. B
- 28. C
- 29. B
- 30. D
- 31. B
- 32. D
- 33. B
- 34. D
- 35. B
- 36. B
- 37. C

- 38. B
- 39. A
- 40. D
- 41. D
- 42. C
- 43. D
- 44. C
- 45. A
- 46. A
- 47. B
- 48. D
- 49. C
- 50. B
- 51. C
- 52. A
- 53. B

II. Fill in the blanks:

- 54. Water purification
- 55. 95%
- 56. March 22
- 57. Filtration purification
- 58. Water pollution
- 59. Pollutants
- 60. Sewage water
- 61. Sludge from debris
- 62. Bricks, cement

III. Answer in one word/sentence:

- 63. Yes
- 64. Wastewater flowing from homes
- 65. Water conservation, reuse measures

- 66. Yes
- 67. Variation in pollutant levels
- 68. Can be used for gardens, toilets
- 69. Purification and chlorination use
- 70. Providing oxygen for the growth of biological components
- 71. Water sources get polluted
- 72. Plastic bottle - metal, plastic spoon - wood, straw - paper use
- 73. Separate collection, recycling through recycling centers
- 74. If there's no hygiene, diseases spread
- 75. Hand washing - to prevent infection
- 76. Diarrhea, cholera

IV. Answer in two sentences:

- 77. Polluted water discharged from homes and factories.
- 78. Laundry water, kitchen water, toilet water.
- 79. Dissolved salts, floating matter, microorganisms.
- 80. Liquid, floating, and biological impurities.
- 81. A network of pipes built collectively to drain wastewater.
- 82. Water sources get polluted, posing a danger to living organisms.
- 83. Water should be used minimally, and waste materials should be separated and disposed of.
- 84. By settling in water, it becomes sludge and blocks drains.
- 85. Typhoid, cholera, hepatitis. Diarrhea. 86. Water sources can get polluted and spread infections.

V. Answer in three-four sentences:

- 87. Drainage pipes help safely discharge wastewater. They help prevent pollution of source water. Essential for protecting the environment and health.
- 88. Reducing waste decreases water pollution. Prevents illnesses and diseases. Environmental conservation is possible.
- 89. Laundry soap, cooking oil, oil, chemicals. These pollute water sources.

VI. Answer in four-five sentences:

90. Gross purification - separating large objects. Market purification - removing floating and dissolved impurities. Biological purification - removing pollutants using bacteria. Chlorination use - disinfection.
91. Oil and cooking oil should not be poured into drains. The use of chemical substances should be reduced. Plastic items should not be thrown into drains. Water should be used sparingly.
92. Construction of toilets. Maintaining hygiene. Purification of sewage water. Cleanliness of public places. Protection of water sources.
