# SCIENCE WORKBOOK

## Class-VII


State Council of Educational Research and Training
Govt. of Tripura

# SCIENCE WORKBOOK

## Class - VII

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**রতন লাল নাথ**
মন্ত্রী
শিক্ষা দপ্তর
ত্রিপুরা সরকার

# বার্তা

শিক্ষার প্রকৃত বিকাশের জন্য, শিক্ষাকে যুগোপযোগী করে তোলার জন্য প্রয়োজন শিক্ষাসংক্রান্ত নিরন্তর গবেষণা। প্রয়োজন শিক্ষা সংশ্লিষ্ট সকলকে সময়ের সঙ্গে সঙ্গে প্রশিক্ষিত করা এবং প্রয়োজনীয় শিখন সামগ্রী, পাঠ্যক্রম ও পাঠ্যপুস্তকের বিকাশ সাধন করা। এস সি ই আর টি ত্রিপুরা রাজ্যের শিক্ষার বিকাশে এসব কাজ সুনামের সঙ্গে করে আসছে। শিক্ষার্থীর মানসিক, বৌদ্ধিক ও সামাজিক বিকাশের জন্য এস সি ই আর টি পাঠ্যক্রমকে আরো বিজ্ঞানসম্মত, নান্দনিক এবং কার্যকর করবার কাজ করে চলেছে। করা হচ্ছে সুনির্দিষ্ট পরিকল্পনার অধীনে।

এই পরিকল্পনার আওতায় পাঠ্যক্রম ও পাঠ্যপুস্তকের পাশাপাশি শিশুদের শিখন সক্ষমতা বৃদ্ধির জন্য তৈরি করা হয়েছে ওয়ার্ক বুক বা অনুশীলন পুস্তক। প্রসঙ্গত উল্লেখ্য, ছাত্র-ছাত্রীদের সমস্যার সমাধানকে সহজতর করার লক্ষ্যে এবং তাদের শিখনকে আরো সহজ ও সাবলীল করার জন্য রাজ্য সরকার একটি উদ্যোগ গ্রহণ করেছে, যার নাম 'প্রয়াস'। এই প্রকল্পের অধীনে এস সি ই আর টি এবং জেলা শিক্ষা আধিকারিকরা বিশিষ্ট শিক্ষকদের সহায়তা গ্রহণের মাধ্যমে প্রথম থেকে দ্বাদশ শ্রেণির ছাত্র-ছাত্রীদের জন্য ওয়ার্ক বুকগুলো সুচারুভাবে তৈরি করেছেন। ষষ্ঠ থেকে অষ্টম শ্রেণি পর্যন্ত বিজ্ঞান, গণিত, ইংরেজি, বাংলা ও সমাজবিদ্যার ওয়ার্ক বুক তৈরি হয়েছে। নবম দশম শ্রেণির জন্য হয়েছে গণিত, বিজ্ঞান, সমাজবিদ্যা, ইংরেজি ও বাংলা। একাদশ দ্বাদশ শ্রেণির ছাত্র-ছাত্রীদের জন্য ইংরেজি, বাংলা, হিসাবশাস্ত্র, পদার্থবিদ্যা, রসায়নবিদ্যা, অর্থনীতি এবং গণিত ইত্যাদি বিষয়ের জন্য তৈরি হয়েছে ওয়ার্ক বুক। এইসব ওয়ার্ক বুকের সাহায্যে ছাত্র-ছাত্রীরা জ্ঞানমূলক বিভিন্ন কার্য সম্পাদন করতে পারবে এবং তাদের চিন্তা প্রক্রিয়ার যে স্বাভাবিক ছন্দ রয়েছে, তাকে ব্যবহার করে বিভিন্ন সমস্যার সমাধান করতে পারবে। বাংলা ও ইংরেজি উভয় ভাষায় লিখিত এইসব অনুশীলন পুস্তক ছাত্র-ছাত্রীদের মধ্যে বিনামূল্যে বিতরণ করা হবে।

এই উদ্যোগে সকল শিক্ষার্থী অতিশয় উপকৃত হবে। আমার বিশ্বাস, আমাদের সকলের সক্রিয় এবং নিরলস অংশগ্রহণের মাধ্যমে ত্রিপুরার শিক্ষাজগতে একটি নতুন দিগন্তের উন্মেষ ঘটবে। ব্যক্তিগত ভাবে আমি চাই যথাযথ জ্ঞানের সঙ্গে সঙ্গে শিক্ষার্থীর সামগ্রিক বিকাশ ঘটুক এবং তার আলো রাজ্যের প্রতিটি কোণে ছড়িয়ে পড়ুক।

(রতন লাল নাথ)

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# CONTENTS

## Chapter- 1

# NUTRITION IN PLANTS

## Autotrophic Nutrition

## Work Sheet-1

- Food is essential for all living organisms.
- The components of food are - Carbohydrate, Fat, Protein, Vitamin, Minerals and Water. These components of food are called nutrients as they nourish our body.
- The mode of taking food by an organism and its utilization by the body is called nutrition.
- The colour of the leaf is green due to the presence of green pigment 'Chlorophyll' in it.
- Most of the green plants produce their own food from the reaction of water and carbon dioxide, taken from the environment in presence of sunlight by the help of chlorophyll. This process is called **Photosynthesis**.
- The essential components of photosynthesis are sunlight, chlorophyll, water and carbon dioxide.
- The organisms those are able to make their own food by the process of photosynthesis and nourish themselves by the produced food are called as autotrophs and the mode of their nutrition is called autotrophic nutrition.

- The organisms which cannot produce their own food and take in food prepared by the autotrophs are called heterotrophs. The mode of their nutrition is called as **heterotrophic nutrition.**
- All green plants are autotrophs.
- All animals, fungi and few plants (Cuscuta) are heterotrophs.

## Questions

**1. Tick the correct answer: (1 mark each)**

i) The raw materials of photosynthesis are -

a) Chlorophyll & sunlight  b) Water & sunlight

√ c) Carbon dioxide & water  d) Carbon dioxide & chlorophyll.

ii) The gas produced by photosynthesis is -

a) $CO_2$  b) $O_2$

c) $H_2$  d) $N_2$

iii) In which food nitrogen is present -

a) carbohydrate  b) fat

c) protein  d) vitamins

iv) Starch is a type of -

a) carbohydrate  b) fat

c) protein  d) vitamin

**2. Mention True / False against each statement: (1 mark each)**

i) Rhizobium can convert atmospheric nitrogen into usable compound and fix it in the soil.

**Answer:- True.**

ii) Plant-root is unable to photosynthesise because of the absence of chlorophyll.

iii) Due to the presence of chlorophyll the colour of leaf is green.

iv) Plants can take atmospheric $N_2$ directly.

3. Fill up the gaps: (1 mark each)

i) The leaves of Opuntia are modified into **thorns** .

ii) All green plants are autotrophs, whereas all animals are _____.

iii) _____is referred to as the food factory of plants.

iv) The _____remains open during daytime and closed at night.

4. Answer in one or two words: (1 mark each)

i) Which gas is utilised in photosynthesis ?

**Answer: $CO_2$.**

ii) By which biological process green plants produce food ?

iii) Which component of xylem transports water and minerals absorbed by the root upto the leaves ?

iv) What is the ultimate source of energy for all living organisms in earth ?

5. Answer the following questions: (2 marks each)

i) Name the different components of food.

***Answer: Different components of food are -Carbohydrate, Protein, Fat, Vitamins, Minerals and water.***

ii) What is nutrition ?

iii) Define autotrophic and heterotrophic nutrition with example.

iv) Why leaf is called as the food factory of plants ?

v) Name the components of photosynthesis.

vi) Why leaves of some desert plants are modified into spines ?

vii) Name the plant parts other than leaf where photosynthesis may occur.

viii) Why the colour of algae is green ?

ix) Mention the elements of the carbohydrate, produced by photosynthesis.

**6. Answer the following questions : (3 marks each)**

i) What is stomata ? Mention the function of guard cell.

***Answer: The tiny pores or openings present on the surface of leaves through which gaseous exchange occur with the atmosphere are called stomata.***

*The guard cells regulate the opening and closing of stomatal pores.*

ii) What is nutrient ? Mention the role of nutrients in the organisms.

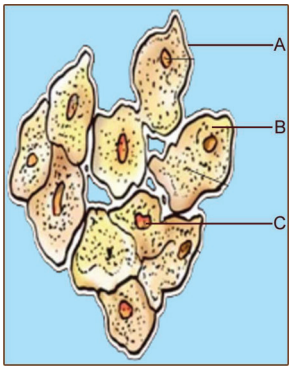
iii) Observe the following reaction carefully and answer the following questions-

Carbon dioxide + water $\xrightarrow[\text{Chlorophyll}]{\text{Sunlight}}$ Carbohydrate + Oxygen + Water.

Which biological process is indicated in the above reaction ? When does this biological process occur ? Mention the reason.

iv) Life on earth is impossible without photosynthesis - explain it.

v) Notice the image. It is the image of some cells of squamous epithelial tissue. Name the parts indicated as (A), (B) and (C).




A _____

B _____

C _____

vi) This image is of an Opuntia plant. In this plant thorns can be seen. What gets modified into thorns ? Then which organ does this plant use to make food?

## Answers

1. (i) (c) (ii) (b) (iii) (c) (iv) (a)
2. (i) True (ii) True (iii) True (iv) False
3. (i) thorns (ii) heterotrophs (iii) Leaf (iv) stomata
4. (i) $CO_2$ (ii) Photosynthesis (iii) Xylem vessels made of tracheid and tracheary elements (iv) Sun

# Other Modes of Nutrition in Plants

## Work Sheet-2

- Due to the absence of chlorophyll in Cuscuta, it can not produce food through photosynthesis. So, they live under the shelter of autotrophs and derive nutrients from the host body and nourish themselves. Such types of plants are called as parasitic plants or parasites.
- The insectivorous plants like pitcher plants, Sundew, etc., can trap insects and fulfil their protein requirement from the insects.
- Fungi also cannot produce their own food due to the absence of chlorophyll. The fungi absorb nutrients from the dead and rotten organic matters. Such type of nutrition is called as saprotrophic nutrition.
- Some beneficial fungi are yeast, mushroom etc.
- Sometimes it is seen that two organisms of different species live together and share both shelter and nutrients. Such relationship is called Symbiosis and the mode of their nutrition is called as symbiotic nutrition.
- A common example of symbiosis is Lichen. Here, algae and fungus live together. The fungus provides shelter, water and minerals to the algae and in return, the algae also share a portion of prepared food to the fungus.

## Questions

**1. Tick the correct answer: (1 mark each)**

i) The organism grows on the leather-shoes during rainy season -

(a) Bacteria √ (b) Fungus

(c) Algae (d) Insects.

ii) A carnivorous plant is -

(a) Cuscuta (b) Mushroom

(c) Pitcher plant (d) Algae.

iii) The food collected by insectivorous plants from the insect body is -

(a) Carbohydrate (b) Protein

(c) Fat (d) Vitamin.

iv) Fungus is -

(a) Saprotrophs (b) Symbiotic

(c) Insectivorous (d) Autotrophs.

**2. Mention True / False against each statement: (1 mark each)**

i) An edible fungus is mushroom. ***Answer : True.***

ii) Chlorophyll is present in cuscuta.

iii) The pitcher plant can produce carbohydrate.

iv) The parasitic plant cuscuta harms the host.

**3. Fill up the gaps: (1 mark each)**

i) Carbohydrates, produced by photosynthesis remain stored in plant body as **starch** .

ii) The symbiotic association of an algae and a fungus is called as _____.

iii) Food rots due to _____ attack.

iv) Living organisms get energy from _____.

**4. Answer in one or two words: (1 mark each)**

i) Name two carnivorous plants. ***Answer: Pitcher plant, Sundew***

ii) Name an unicellular fungus.

iii) Which organ of Pitcher plant takes the shape of a pitcher ?

iv) Why do fungus cannot produce food ?

**5. Answer the following questions: (2 marks each)**

i) What is Lichen ?

***Answer: The symbiotic association of algae and fangus is called lichen. Here, algae and fungus live together. The fungus provides shelter, water and minerals to the algae and in return, the algae also share a portion of prepared food to the fungus.***

ii) What do you mean by host ?

iii) Human depend upon plants for food. Then can human be called as parasites ? Give reason to justify your answer.

iv) What do you mean by parasitic plants ? Give examples.

v) The insectivorous plants can produce carbohydrate by photosynthesis. Then, why do they hunt insects ?

vi) Define saprotrophs. Give examples.

**6. Answer the following questions : (3 marks each)**

i) Explain the word 'symbiosis' with the help of a suitable example.

***Ans: Sometimes it is seen that two organisms of different species live together and share both shelter and nutrients. Such relationship is called symbiosis and the mode of their nutrition is called as symbiotic nutrition. In such association, both the organisms are benifited.***

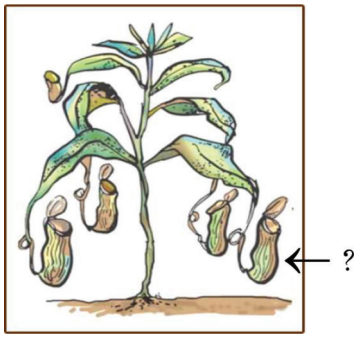
***A common example of symbiosis is Lichen. Here, algae and fungus live together. The fungus provides shelter, water and minerals to the algae and in return, the algae also share a portion of prepared food to the fungus.***

ii) Why is it necessary to apply fertilizer to the soil ?

iii) The figure indicates a thallophyta. Does it contain chlorophyll ?

Then how does it perform nutrition ?

iv) The image is of a plant. The indicated part is the transformation of which organ? Why such modification occurs? Which type of nutrition does this plant perform?




## Answers

1. (i) (b) (ii) (c) (iii) (b) (iv) (a)
2. (i) True (ii) False (iii) True (iv) True
3. (i) starch (ii) lichen (iii) fungal (iv) food
4. (i) Pitcher plant, Sun dew (ii) Yeast (iii) Leaf

   (iv) Due to the absence of chlorophyll

## Chapter- 2

# Nutrition in Animals

## Nutrition in Animals

## Work Sheet-1

- Animals cannot synthesise their own food. So they get food from plants.
- Herbivorous animals eat plants directly as food. Again the carnivorous animals eat herbivorous animals as food.
- Animals take complex food materials like carbohydrate, protein and fat. So, after intake of food they are broken down into simpler absorbable substances. The breakdown of complex food components into simpler substances is called digestion.
- The first step of animal nutrition is ingestion. The mode of taking food into the body varies in different organisms. Bees suck the nectar of flowers, infants of human feed on mother's milk. Some aquatic animals filter tiny food particles floating nearby and feed upon them.

**1. Tick the correct answer : (1 mark each)**

i) The first step of animal nutrition is -

a) Assimilation b) Absorption

√ c) Ingestion d) Digestion.

ii) The breakdown of complex food components into simpler substances is called -

a) Ingestion b) Digestion

c) Absorption d) Assimilation

2. Mention True / False against each statement : (1 mark each)

i) Animals can synthesise their own food. ***Answer:- False.***

ii) Animals take complex food components.

iii) The mode of taking food into the body varies in different organisms.

iv) We use tongue present in our mouth cavity more while talking.

3. Fill up the gaps : (1 mark each)

i) Animals get food mainly from **plants** .

ii) Infants of mammals feed on mother's _____.

iii) _____ feeds on animals covered by hard shells.

iv) Some aquatic animals _____ tiny food particles.

v) Bees suck the _____ of flowers.

4. Answer in one or two words : (1 mark each)

i) Name an animal which eats both plants and animals. ***Answer: Cat.***

ii) Name an animal able to synthesise own food.

iii) Name an animal which can pop out its stomach through its mouth.

iv) Which material does an infant of human drink from mother's breast ?

5. Answer the following questions : (2 marks each)

i) Define herbivorous animals. Give example.

***Answer: The animals that feed on plants directly are called herbivorous animals or herbivores. e.g. - Cow, goat, elephant, monkey, etc.***

ii) Define carnivores. Give examples.

iii) Why do living things need food ?

iv) What is digestion ?

v) Why is digestion of food needed ?

**Answers**

1. (i) ingestion (ii) digestion

2. (i) False (ii) True (iii) True (iv) True

3. (i) plants (ii) milk (iii) Starfish (iv) filter
   (v) nectar

4. (i) Cat, human (ii) Euglena (iii) Star fish (iv) Milk

# Digestion in Human Body

## Work Sheet- 2

- The steps of animal nutrition are - ingestion, digestion, absorption, assimilation and egestion.
- The events of nutrition occur within the alimentary system. The alimentary system is composed of alimentary canal and digestive glands.
- The different parts of alimentary canal are - mouth cavity, pharynx, oesophagus, stomach, small intestine, large intestine, rectum and anus.
- The digestive glands are - salivary glands, liver, pancreas, gastric glands and intestinal glands.
- Within the different parts of alimentary canal, the solid and complex food materials are digested into simpler food materials by the action of different enzymes secreted from the digestive glands.
- Digested simpler food particles are absorbed by the villi present on the lining of small intestine and transported to cells via blood.
- An amount of water and minerals are absorbed by large intestine.
- Undigested and unabsorbed food substances are converted into faeces within the rectum and remain there temporarily and at last removed through the anus.

### Questions

1. Fill up the gaps: (1 mark each)

   i) Digestion starts from the **mouth cavity** .

   ii) Alimentary canal begins at the _____and ends at the _____.

iii) Each tooth is rooted in a separate socket in the _____.

iv) Undigested portions of food are removed as _____ through the anus.

v) _____ glands are present on the inner lining of small intestine.

vi) _____ secreted from the inner lining of stomach protects the wall of stomach.

vii) Gastric juice digests mainly _____.

viii) _____ is stored temporarily in the gall bladder.

ix) Being digested, fat is converted into _____& _____.

x) _____ maximize the surface of small intestine.

xi) The hormone _____ regulates blood sugar level.

2. Mention True / False against each statement: (1 mark each)

i) HCl destroys germs present in food. ***Answer:- True.***

ii) Bile makes food acidic.

iii) Amino acids are used to synthesise protein in cells.

iv) Increased insulin secretion causes diabetis.

v) Salivary juice converts boiled starch into simple sugar.

vi) Glucose is broken down into $CO_2$, water and energy within the cell.

3. Tick the correct answer : (1 mark each)

i) The part of alimentary canal in between mouth cavity and stomach is -

(a) Small intestine (b) Large intestine

√(c) Oesophagus (d) Rectum

ii) The widest part of the alimentary canal is -

(a) Stomach (b) Small intestine

(c) Large intestine (d) Rectum

iii) Bile is produced in -

(a) Stomach (b) Liver

(c) Gall bladder (d) Pancreas

iv) The type of food digested by the action of pancreatic juice is -

(a) Carbohydrates (b) Protein

(c) Fat (d) All of the above

v) During digestion carbohydrate is converted into -

(a) Amino acids (b) Fatty acid

(c) Glucose (d) Glycerol

vi) Digested food particles are absorbed in -

(a) Stomach (b) Small intestine

(c) Large intestine (d) Rectum

vii) Water and salts are absorbed in -

(a) Stomach (b) Small intestine

(c) Large intestine (d) Rectum

4. Answer in one or two words: (1 mark each)

i) In which part of alimentary canal gastric glands are present ?

***Answer: Stomach.***

ii) Which organ of mouth cavity helps in receiving taste of food ?

iii) In which part of the alimentary canal HCl is secreted ?

iv) Name the largest digestive gland present in our body.

v) In what kind of food digestion does bile juice help ?

vi) Name the simple compound produced from protein digestion.

5. Match the columns :

| | |
|---|---|
| Absorption | Stomach |
| HCl | Mouth cavity |
| Salivary juice | Villi |
| Taste bud | Diabetis |
| Insulin | Tongue |

6. Answer the following questions: (2 marks each)

   i) Mention the steps of nutrition in animals.

   ***Answer : The steps involve in nutrition in animals are - Ingestion, digestion, absorption, assimilation and egestion.***

   ii) What is digestion ?

   iii) Write the name of different parts of alimentary canal of human.

   iv) Name the different digestive glands present in the alimentary system.

   v) What is digestive juice ?

   vi) What do you mean by milk teeth and permanent teeth ?

   vii) What is tooth decay ?

   viii) Why rinsing the mouth is necessary after every meal ?

   ix) What is vomiting ?

   x) What do you mean by absorption ?

   xi) What is egestion ?

   xii) What is diabetis ?

7. Answer the following questions : (3 marks each)

   i) Mention the names of different teeth present in the mouth cavity with their functions.

   ***Answer: The teeth present in the mouth cavity are - incisors, canines, premolars and molars.***

   ***Functions: (i) Incisors are used for cutting and biting the food.***

   ***(ii) Canines are used for piercing and tearing the food.***

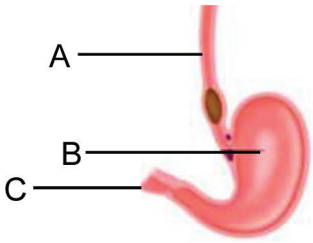
   ***(iii) Premolars & molars are used for grinding and crushing the food.***

   ii) Write the names of the indicated parts of the given diagram.

   (A) _____

   (B) _____

   (C) _____




   iii) What role do teeth and tongue perform in digestion of food ?

   iv) Write the functions of HCl secreted by stomach.

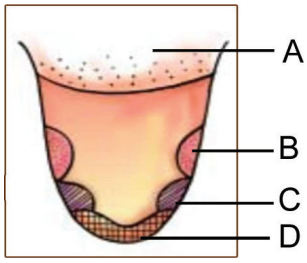
v) Expand - ORS. How do you make ORS at home ?

vi) Draw a neat diagram of human alimentary system and label its different parts.

vii) What is epiglottis ? Mention its function.

viii) This is a diagram of a tongue.

Mention the taste received by the different parts indicated as :




(A) _____

(B) _____

(C) _____

(D) _____

ix) What is villi ? Mention its function.

## Answers

| | | | | |
|---|---|---|---|---|
| 1. | (i) mouth cavity | (ii) mouth, anus | (iii) gum | |
| | (iv) faeces | (v) Intestinal | (vi) Mucus | |
| | (vii) protein | (viii) Bile | (ix) fatty acid and glycerol | |
| | (x) Villi | (xi) insulin | | |
| 2. | (ii) False | (iii) True | (iv) False | |
| | (v) True | (vi) True | | |
| 3. | (i) (c) | (ii) (a) | (iii) (b) | (iv) (d) |
| | (v) (c) | (vi) (b) | (vii) (c) | |
| 4. | (ii) Tongue | (iii) Stomach | (iv) Liver | |
| | (v) Fat | (vi) Amino acid | | |

# Digestion in Herbivores and Amoeba

## Work Sheet- 3

- Cow, goat, buffaloes, deer, etc., are ruminant animals. They quickly swallow grass and store it in a part of the stomach called rumen. Later the partially digested food or cud is taken back to the mouth and chewed. This process is called rumination.
- The ruminant animals eat grasses. Grass is rich in cellulose, a complex carbohydrate. In the alimentary canal of these animals, a sac-like structure called caecum is present. By the help of bacteria present in the caecum this cellulose is digested.
- The unicellular animals amoeba has no mouth cavity or alimentary system. They engulf food particles by the help of pseudopodia. Amoeba can change its shape and position.

### Questions

1. Tick the correct answer: (1 mark each)

   i) A ruminant anilmal is -

   a) human  b) tiger

   √ c) deer  d) cat.

   ii) Cellulose is a -

   a) carbohydrate  b) fat

   c) protein  d) amino acid.

iii) Amoeba engulfs food by -

a) cytoplasm b) nucleus

c) food vacuole d) pseudopodia.

2. Fill up the gaps : (1 mark each)

i) The partially digested food in the rumen is called **cud** .

ii) Within the caecum, _____ present in grass is digested by the action of bacteria.

iii) In between the small intestine and large intestine of the alimentary canal of deer, _____ is situated.

3. Mention True / False against each statement : (1 mark each)

i) Human can digest cellulose. ***Answer:- False.***

ii) In the rumen, food is partially digested.

iii) Cat is a ruminant animal.

4. Answer in one or two words : (1 mark each)

i) What is the name of the complex carbohydrate present in grass ?

***Answer: Cellulose***

ii) In which part of the alimentary system of cow rumen is present ?

iii) Name an animal that can change its shape ?

5. Answer the following questions : (2 marks each)

i) What do you mean by rumination ?

***Answer: Rumination is the process by which the partially digested food or cud returns to the mouth in small lumps and then the animal chews it again.***

ii) Mention the position of caecum in the alimentary system.

iii) Name an animal in which intra cellular digestion occur.

6. Answer the following questions : (3 marks each)

i) What is pseudopodia ? Mention its two functions.

***Answer: Amoeba pushes out its cell membrane along with a small amount of cytoplasm in one or more places to form one or more finger-like projections. These projections are called as pseudopodia. Functions: (i) The pseudopodia helps in capturing food. (ii) It also helps in movement.***

ii) What do you mean by ruminant animal ? Name four ruminant animals.

iii) What is caecum ? Mention its role in food digestion.

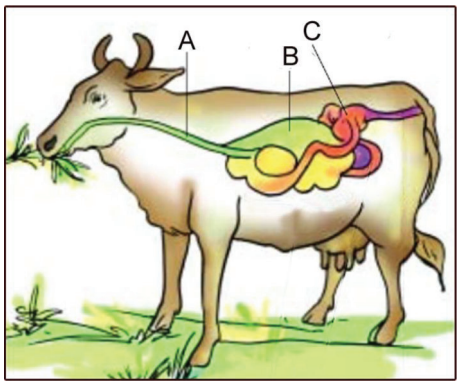
iv) Why can't human digest cellulose ?

v) Describe briefly the process of feeding and digestion in amoeba.

7. Match the columns :

| | |
|---|---|
| Cellulose | Bacteria |
| Caecum | Amoeba |
| Pseudopodia | Complex carbohydrate |
| Unicellular animal | Locomotory organ |

8. Name the three parts indicated in the diagram of the alimentary system of a cow.




(A) _____

(B) _____

(C) _____

**Answers**

| | | |
|---|---|---|
| 1. (i) deer | (ii) carbohydrate | (iii) pseudopodia. |
| 2. (i) cud | (ii) cellulose | (iii) caecum |
| 3. (i) False | (ii) True | (iii) False |
| 4. (i) Cellulose | (ii) stomach | (iii) Amoeba |

## Chapter- 3

# Fibre to Fabric

## Wool

## Work Sheet-1

- Wool and fibers are obtained from animals. Wool comes from sheep, goat, yak and some other animals. Most of the wool available in the market is found from sheep.
- Sheep has two types of fibres - (i) The coarse beard hair and (ii) The fine soft under-hair, close to the skin. This fine soft hair provide the fibre for making wool.
- Yak wool is common in Tibet and Ladakh. Angora wool is obtained from Angora goats, found in Jammu and Kashmir. The under fur of Kashmiri goat is used to make Pashmina shawls.
- The animals Lama and Alpaca, found in America also yield wool.
- In India sheep is reared in many states such as Himachal Pradesh, Jammu and Kashmir, Arunachal Pradesh, Sikkim, Hariyana, Punjab, Rajasthan and Gujarat.
- Sweaters, shawls, socks, hats, carpets, etc., are made from wool.
- In terms of number of sheeps, India ranks third in the world. China is first and Australia is second. However New Zealand sheeps are known to yield the best wool in the world.

## Questions

1. Fill up the gaps : (1 mark each)

   i) Most of the wool available in the market is found from the fur of **sheep**.

   ii) The under fur of Kashmiri goat is used to make _____ shawls.

   iii) In terms of number of sheeps, China ranks _____ in the world.

2. Tick the correct answers : (1 mark each)

   i) The animal that does not yield wool is -

   a) sheep  b) goat

   √ c) wooly dog  d) yak.

   ii) In terms of number of sheeps in the world, India ranks -

   a) first  b) second

   c) third  d) fourth

   (iii) The best wool in the world is produced in -

   a) India  b) China

   c) Australia  d) New Zealand

3. Mention True / False against each statement : (1 mark each)

   i) Angora wool is found in Himachal Pradesh. ***Answer:- False.***

   ii) In Ladakh wool is collected from yak.

   iii) Sheep is a herbivorus animal.

4. Answer in one or two words : (1 mark each)

   i) Name the fibres found from animals.

   ***Answer: Wool, silk.***

   ii) Name two animals found in America which yield wool.

   iii) From which type of goat, fur is collected to make Pashmina shawls.

5. Answer the following questions : (2 marks each)

   i) Name the Indian states where sheep is reared for collecting wool.

   ***Answer: In India sheep is reared in many states such as Himachal Pradesh, Jammu and Kashmir, Arunachal Pradesh, Sikkim, Hariyana, Punjab, Rajasthan and Gujarat.***

   ii) Name four winter-clothes made of wool.

   iii) Name four wool yielding animals.

6. Answer the following questions: (3 marks each)

   i) Name two types of fur found from sheep. Among them which type of fur is used to prepare wool ?

   ii) How do the animals such as sheeps, goats etc., keep their body warm in cool places.

| Answers | | |
|---|---|---|
| 1. (i) sheep | (ii) pashmina | (iii) first |
| 2. (i) Wooly dog | (ii) Third | (iii) New Zealand |
| 3. (i) False | (ii) True | (iii) True |
| 4. (i) Wool, silk | (ii) Lama & Alpaca | (iii) Kashmiri goat |

# Silk Moth

## Work Sheet- 2

- Silk moth are reared for obtaining silk. Silk thread is obtained from the cocoon of the silk moth.
- There are four stages in the life cycle of silk worms - Egg, larva or caterpillars, pupa and adult moth.
- The larva or caterpillars are also called silk worm. This caterpillars eat plenty of mulberry leaves and undergo rapid growth. In that stage, the caterpillar secretes a proteinaceous substance, which hardens on exposure into air and becomes silk fibre. During this time the caterpillar swings its head and gradually covers itself by silk fibre and turns into pupa. This covering is called cocoon. The developement of the pupa continues inside the cocoon.
- The most reared silk-moth in India is the Mulberry silk-moth. Besides the Mulberry silk-moth, Tassar silk, Mooga silk, Eri silk etc. are obtained from different types of silk-moth.
- In our state, silk-moth is reared in different places of Champaknagar, Bisramganj, Panisagar and South Tripura.
- Silk fibres are separated out from the cocoon through reeling process.
- Silk fibre is made of protein.

### Questions

1. Tick the correct answer : (1 mark each)

   i) The component of silk fibre is -

   (a) carbohydrate  √ (b) protein

(c) fat (d) starch

ii) Rearing of silk moth is referred to as-

(a) agriculture (b) horticulture

(c) sericulture (d) tissue culture

iii) The larva of silk moth eats mulberry leaf during -

(a) 15 - 20 days (b) 20 - 25 days

(c) 25 - 30 days (d) 30 - 35 days

iv) The stage of silk moth, during which it eats mulberry leaf -

(a) larva stage (b) pupa stage

(c) adult stage (d) egg stage.

2. Fill up the gaps : (1 mark each)

i) Developement of **pupa** stage of silk moth continues inside the cocoon.

ii) Cocoon is produced during _____ stage of the life cycle of silk moth.

iii) Within the cocoon _____ stage is developed into adult stage.

3. Mention True / False against each statement : (1 mark each)

i) The type of most reared silk moth in India is Mulberry silk moth. ***Answer:- True.***

ii) Mooga silk is obtained from Mulberry silk moth.

iii) In Panisagar of North Tripura Silk moth is reared.

4. Answer in one or two words : (1 mark each)

i) What is referred to as larva ? ***Answer: Caterpillar or Silkworm.***

ii) In which country silk was discovered?

iii) Mention the two stages of silk worm related to silk production directly.

iv) What is the main food of larva of silk moth ?

5. Answer the following questions : (2 marks each)

i) "Burning wool or silk makes us experience the smell of burning hair"- What does it prove?

***Answer: "Burning wool or silk make us experience the smell of burning hair"- it proves that wool or silk is made of protein.***

ii) Write the names of four stages of life cycle of silk moth.

iii) Mention the name of different types of silk.

iv) Write the characteristics of mulberry silk.

v) In which places of Tripura, Silk moth is reared ?

vi) What is sericulture ?

vii) What is "silk route" ?

6. Answer the following questions: (3 marks each)

i) What is cocoon ? How cocoon is produced ?

ii) Mention three common uses of silk.

iii) What do you mean by reeling ? How silk thread is seperated from the cocoon?

**Answers**

1. (i) protein (ii) sericulture (iii) 25 - 30 days
   (iv) larva stage
2. (i) pupa (ii) larva (iii) pupa
3. (i) True (ii) False (iii) True
4. (i) Caterpillar or Silkworm (ii) China (iii) Larva and pupa
   (iv) Mulberry leaves.

# Chapter- 4

# HEAT

Synopsis of the chapter:

- Our sense of touch is not always a reliable guide to the degree of hotness or coldness of an object.
- Temperature is a measure of the degree of hotness of an object.
- Thermometer is a device used for measuring temperature.
- Clinical thermometer is used to measure our body temperature.
- The range of clinical thermometer in Celsius scale is from 35˚C to 42˚C and in Farenheit scale it is from 94˚F to 108˚F.
- Laboratory thermometer is used for measuring the temperature of any object other than the human body.
- The range of a Laboratory thermometer is generally from -10˚C to 110˚C.
- The normal temperature of human body is 37˚C or 98.6˚F.
- Clinical thermometer might break if it is kept near a flame or sunlight.
- The maximum and minimum temperature reported in weather reports are measured by maximum and minimum thermometer.

- Mercury is a toxic substance. Hence it is advised to use digital thermometer which is less dangerous.
- Heat is a form of energy.
- The heat flows from a body at a higher temperature to a body at a lower temperature.
- There are three ways in which heat can flow from one object to another. These are conduction, convection and radiation.
- In solids, generally, the heat is transferred by conduction. In liquids and gases, the heat is transferred by convection. No medium is required for transfer of heat by radiation.
- The materials which allow heat to pass through them easily are called conductors of heat.
- The materials which do not allow heat to pass through them easily are called insulators.
- Dark-coloured objects absorb more heat than the light- coloured objects. That is the reason we feel more comfortable in light coloured clothes in the summer.
- Woolen clothes keep us warm during winter. It is so because wool is a poor conductor of heat and it has air trapped in between the fibres.

# Heat and Temperature

## Work Sheet -1

1. Choose the correct option in the following : (1 mark each)

(i) The device used for measuring temperature is called-

(a) Barometer (b) Thermometer (c) Odometer (d) Voltameter

(ii) In which scale, the normal temperature of human body is 37°C ?

(a) Farenheit scale (b) Celsius scale

(c) Reaumer scale (d) Kelvin scale

(iii) A liquid which is a good conducter of heat is-

(a) Mercury (b) Alcohol (c) Water (d) Milk

(iv) Which one is filled in the bulb of a thermometer ?

(a) Copper (b) Mercury (c) Lead (d) Silver

(v) Anik has three thermometers as shown in figure. He wants to measure the temperature of his body and that of boiling water. Which thermometer(s) should he choose?

I II


III

(a) Thermometer I or III for measuring body temperature and II for measuring the temperature of boiling water.

(b) Thermometer I for measuring temperature of both.

(c) Thermometer II for measuring temperature of both.

(d) Thermometer III for measuring temperature of both.

(vi) Figure ( a – d ) shows a student reading a doctor's thermometer. Which of the figure indicates the correct method of reading temperature?

(a) (b) (c) (d)

(vi) Four arrangements to measure temperature of ice in beaker with laboratory thermometer are shown in figures (A, B, C and D). Which one of them shows the correct arrangement for accurate measurement of temperature?


(vii) Ayan and Anik measured their body temperature. Ayan found it to be 37°C and Anik recorded 98.6°F. Which of the following statement is correct?

(a) Ayan has higher body temperature than Anik.

(b) Anik has higher body temperature than Ayan.

(c) Both have normal body temperature.

(d) Both are suffering from fever.

2. Fill in the blanks : (1 mark each)

   (i) The normal temperature of human body is _____ °F.

   (ii) The temperature of boiling water cannot be measured by _____ thermometer.

   (iii) Ensure that before use of clinical thermometer, the mercury level is below _____ °C.

   (iv) The range of laboratory thermometer is _____ °C to _____ °C.

   (v) There is a _____ near the bulb of clinical thermometer which prevents mercury level from falling on its own.

3. Write 'T' for True or 'F' for False for the following statements: (1 mark each)

   (i) Our sense of touch about hotness or coldness is not always reliable.

   (ii) Marking on clinical thermometer is from 0°C to 100°C.

   (iii) Normal temperature of human body is 98.6°C.

   (iv) The maximum and minimum temperature of the day is measured by a laboratory thermometer.

   (v) Thermometer should be washed properly before and after use with antiseptic solution.

   (vi) Hold the thermometer by the bulb while reading it.

4. Match the statements in column I with the suitable in column II. (1 mark each)

| Column - I | Column - II |
|---|---|
| (a) A reliable measure of the hotness or coldness of an object | (i) 35°C |
| (b) Lower fixed point of clinical thermometer | (ii) Maximum thermometer |
| (c) Maximum temperature in weather reports is measured by | (iii) 42°C |
| (d) Upper fixed point of clinical thermometer | (iv) Temperature |

5. Give reasons for the following : (2 marks each)

   (i) Always wash the thermometer with an antiseptic solution before and after use.

   Ans : On washing the thermometer by antiseptic solution before and after one use, make it better to measure the temperature next time and stops the spreading of germs.

   (ii) There is a lot of concern over the use of mercury in thermometers.

   _____

   _____

6. Differentiate between the following : (2 marks each)

   (i) Heat and Temperature.

   _____

   _____

   (ii) Clinical and Laboratory thermometer.

   _____

   _____

7. Very short answer type questions : (1 mark each)

   (i) What is the value of normal body temperature in Celsius scale?

   _____

   (ii) What prevents the mercury to fall in a clinical thermometer when taken out of the mouth ?

   _____

   (iii) Which scale is used more in clinical thermometer?

   _____

   (iv) What will happen if a clinical thermometer is kept in sunlight?

   _____

   (v) What is the range of Laboratory thermometer?

   _____

8. Short answer type questions : (2 marks each)

   (i) How many temperature scales are marked on a clinical thermometer? Name these scales.

   _____

   _____

   (ii) Write down the ranges of a clinical thermometer on Celsius scale and Farenheit scale?

   _____

   _____

   (iii) Why the temperature of boiling water cannot be measured by clinical thermometer?

   _____

   _____

   (iv) Why Laboratory thermometer is not used to measure the body temperature of human being?

   _____

   _____

9. Long answer type questions : 3/4 marks

   (i) List the precautions to be taken while reading a clinical thermometer.

   _____

   _____

   _____

   (ii) Why the use of digital thermometer is less dangerous than mercury thermometer ?

   _____

   _____

   _____

(iii) Write down three precautions needed while reading a laboratory thermometer in addition to the precautions taken while reading a clinical thermometer.

_____

_____

_____

(iv) A laboratory thermometer A is kept 7 cm away on the side of the flame while a similar thermometer B is kept 7 cm above the flame of a candle as shown in figure.

(A) (B)

Which of the thermometers, A or B, will show a greater rise in temperature? Give reason for your answer.

_____

_____

_____.

# Transfer of Heat

## Work Sheet -2

1. Choose the correct option in the following: (1 mark each)

(i) Heat always flows

(a) From a colder object to a hotter object

(b) From a hotter object to a colder object

(c) Heat never flows from one object to other

(d) In both the directions

(ii) The woolen clothes keep us warm during winter because

A. Wool is an insulator B. Wool has vacuum C. Wool traps air D. Wool is a conductor

(a) A and B (b) A and C

(c) B and C (d) B and D

(iii) When a heated pan is placed outside, it slowly cools down by the process of-

(a) Conduction (b) Convection

(c) Radiation (d) None of above

(iv) Four boys went for a picnic on a hot day. Arjun wore a white shirt, Vikas wore a red shirt, Ankit wore a black shirt while Ajit wore a orange shirt. Who felt the heat most?

(a) Arjun, as white colour absorbs most heat

(b) Ankit, as black colour absorbs most heat

(c) Vikas, as red colour absorbs most heat

(d) None of these

(v) Four boxes are left under the sun for half an hour. Boxes are made up of different material. Which box will be hottest?

(a) Iron box (b) Glass box

(c) Wooden box (d) Plastic box

2. Fill in the blanks : (1 mark each)

(i) The water and air are _____ conductors of heat.

(ii) During the day, the land gets heated _____ than the water.

(iii) All hot bodies radiate _____.

(iv) Light coloured clothes _____ most of the heat that falls on them.

(v) Heat from the sun reaches on the earth by the process of _____.

(vi) Dark coloured clothes _____ heat to become hot.

(vii) In solids, heat is transferred by the process of _____.

(viii) The cool breeze that blows from the land towards the sea is called _____.

3. Write 'T' for True or 'F' for False for the following statements. (1 mark each)

(i) In all cases heat flows from a hotter object to a colder object.

(ii) Woolen clothes keep us warm during winter.

(iii) Water and air are good conductors of heat.

(iv) Sea breeze blows during day.

(v) During the day, the land gets heated faster than the water.

(vi) All hot bodies radiate heat.

4. Match the statements in Column I with the suitable in Column II. (1 mark each)

| Column - I | Column - II |
|---|---|
| (a) Transfer of heat in vacuum | (i) Insulator |
| (b) Poor conductors of heat | (ii) Convection |
| (c) Transfer of heat through gases | (iii) Radiation |

5. Give reasons for the following : (2 marks each)

   (i) Handle of pressure cooker is covered with thick plastic.

   _____

   _____

   (ii) Birds puff up their feathers in winter.

   _____

   _____

6. Differentiate between the following: (2 marks each)

   (i) Conductor and insulator

   _____

   _____

   (ii) Conduction and convection

   _____

   _____

7. Very short answer type questions: (1 mark each)

   (i) In how many ways transfer of heat take place?

   _____

   (ii) In which substances, the process , convection of heat transfer take place?

   _____

   (iii) Name the method of heat transfer by which sea breeze generates?

   _____

   (iv) Name the method of heat transfer by which heat is transferred from sun to earth?

   _____

   (v) Name the method of heat transfer which does not require a material medium?

   _____

8. Short answer type questions : (2 marks each)

   (i) Name the methods of heat transfer? By which method, heat transfers in solids?

   _____

   _____

   (ii) Why are cooking utensils provided with handles made of plastic or wood?

   _____

   _____

   (iii) What do you mean by the process conduction of heat transfer?

   _____

   _____

   (iv) What do you mean by the process convection of heat transfer?

   _____

   _____

   (v) What do you mean by the process radiation of heat transfer?

   _____

   _____

   (vi) Why can the sun's heat not reach the earth by conduction or convection?

   _____

   _____

   (vii) Why two thin blankets joined together are more comfortable than one thick blanket in winter?

   _____

   _____

9. Long answer type questions : (3/4 marks)

   (i) Why is it more comfortable to wear light coloured clothes in the summer and dark coloured clothes in the winter?

(ii) One end of the objects such as a steel spoon, a plastic scale and a pencil is put in a beaker of hot water. In which of these objects the other end will get hot? Why?

(iii) A person has a white shirt and a black shirt. Which shirt will make him more comfortable in:

(a) Summer and (b) Winter? Give reasons for your answer.

**Answers**

**WORKSHEET-1**

1. (i) b (ii) b (iii) a (iv) b (v) a (vi) a (vii) a (viii) c
2. (i) 98.6 (ii) clinical (iii) 35 (iv) -10,110 (v) kink
3. (i) T (ii) F (iii) F (iv) F (v) T (vi) F

4. (a)—(iv) , (b)—(i), (c)—(ii), (d)—(iii)

7. (i) 37°C (ii) Kink near the bulb, (iii) Farenheit, (iv) Break,
(v) -10 to 110°C

**WORKSHEET-2**

1. (i) b (ii) b (iii) c (iv) b (v) a

2. (i) bad (ii) faster (iii) heat (iv) reflect (v) radiation
(vi) absorb (vii) conduction (viii) land breeze

3. (i) T (ii) T (iii) F (iv) T (v) T (vi) T

4. (a)—(iii), (b)—(i), (c)—(ii)

7. (i) three (ii) liquid and gaseous substances (iii) convection
(iv) radiation (v) radiation.

## Chapter - 5

# Acids, Bases and Salts

## Work Sheet

**KEY POINTS :**

- Acids are sour in taste, their chemical nature is acidic.
- Bases are bitter in taste, their chemical nature is basic.
- Special type of substances is used to test whether a substance is acidic or basic are known as indicators.
- Litmus is a widely used indicator. It is extracted from Lichens.
- Acids turn blue litmus paper to red, bases turn red litmus paper to blue.
- Citric acid found in lemon juice, tartaric acid in tamarind and vinegar contains acetic acid.
- Calcium hydroxide, sodium hydroxide etc. are bases.
- The solutions which do not change the colour of either red or blue litmus are called neutral solutions.
- If the rain water containing excess of acids then it is called acid rain.
- The reaction between an acid and a base to give salt and water is known as neutralization reaction.

- Salts are of three types- acidic, basic or neutral in nature.
- Hydrochloric acid found in our stomach which helps us to digest food. But excess of acid in the stomach causes indigestion. To relieve indigestion, we need to use antacid such as milk of magnesia.
- When an ant bites, it injects formic acid into the skin which causes pain. Baking soda is used to relieve pain.
- To neutralise the acidity of soil, bases like quick lime (calcium oxide) or slake lime (calcium hydroxide) are mixed in the soil.

## Questions

1. Tick the correct answers : (1 mark each)

(i) The substances which are sour in taste-

(a) Bases (b) Acids

(c) Indicator (d) Neutral.

(ii) Which of the following turns blue litmus to red?

(a) Baking soda (b) Milk of magnesia

(c) Lemon juice (d) Sugar solution.

(iii) Which of the following turns red litmus to blue?

(a) Vinegar (b) Citric acid

(c) Lime water (d) Common salt solution.

(iv) Acid found in our stomach is-

(a) Acetic acid (b) Hydrochloric acid

(c) Lactic acid (d) Sulphuric acid

(v) Which of the following is responsible for acid rain.

(a) Carbonic acid (b) Formic acid

(c) Acetic acid (d) Lactic acid

(vi) Milk of magnesia is-

(a) Pain killer (b) Acidic

(c) Antibiotic (d) Antacid

(vii) Which of the following is an inorganic acid?

(a) Ciric acid (b) Nitric acid

(c) Acetic acid (d) None of these.

(viii) Which of the following is an acid- base indicator?

(a) Turmeric (b) Vinegar

(c) Soap water (d) Lime water.

2. Fill in the blanks : (1 mark each)

(i) Source of litmus is _____.

(ii) _____ acid is found in lemon juice.

(iii) Phenolphthalein is a _____.

(iv) Phenolphthalein turns _____ colour in basic solution.

(v) Turmeric, litmus etc., are _____ indicator.

(vi) Hydrochloric acid + _____ → Sodium chloride + Water

(vii) Ant bites injects _____ acid into the skin.

3. Mention True/ False:- (1 mark each)

(i) No colour change of litmus takes place in neutral solution.

(ii) Orange juice turns red litmus to blue.

(iii) Vinegar contains acetic acid.

(iv) Antacids are used in indigestion.

(v) To neutralise the acidity of soil citric acid is mixed in the soil.

4. Answer in one word : (1 mark each)

(i) What is the colour of litmus in aqueous solution?

_____

(ii) What is the chemical name of milk of magnesia?

_____

(iii) Which acid is present in amla?

_____

(iv) Name the acid present in curd.

_____

(v) Write the name of acid- base indicator extracted from lichen.

_____

(vi) What is the colour of phenolphthalein in acidic solution?

_____

(vii) Is vinegar acidic or basic?

_____

(viii) What is the change of colour of blue litmus paper when dipped in Milk of Magnesia Solution?

_____

(ix) Name the reaction in which an acid react with a base to give salt and water.

_____

(x) What is the chemical name of baking soda?

_____

5. Answer the following questions : (2 marks each)

(i) What is litmus? Write its uses.

(ii) Define salts. Write the types of salts.

(iii) Why are antacids taken in indigestion?

6. Answer the following questions : (3 marks each)

(i) Define acid. Write its two characteristics.

(ii) Distinguish between acids and bases.

(iii) How is acid rain caused? Write its harmful effect.

(iv) What is neutralization reaction? Explain with a chemical equation.

(v) Explain how to neutralise the soil acidity.

7. HOTS : Marks- 4/5

(a) What are indicators? Write the types of indicators.

(b) You are given 3 bottles containing each of acid, base and neutral solution. How will you identify these solutions? (2+3=5)

8. Complete the table with appropriate words :

| Sl No | Test solution | Effect on red litmus paper | Effect on blue litmus paper |
|---|---|---|---|
| 1. | Soap water | | |
| 2. | Vinegar | | |
| 3. | Salt solution | | |
| 4. | Lime water | | |
| 5. | Lemon juice | | |
| 6. | Tamarind water solution | | |

**Answers**

1. (i) (b) (ii) (c) (iii) (c) (iv) (a)
   (v) (d) (vi) (b) (vii) (a) (viii) (c).
2. (i) lichen (ii) citric (iii) Indicator (iv) violet (v) Natural
   (vi) Sodium hydroxide (vii) Formic
3. (i) T (ii) F (iii) T (iv) F (v) T (vi) F.
4. (i) Violet (ii) Magnesium Hydroxide (iii) Ascorbic acid
   (iv) Lactic acid (v) Colourless (vi) Acidic (vii) No change in colour
   (viii) Neutralization (ix) Sodium hydrogen carbonate (x) Formic acid.

## Chapter - 6

# Physical and Chemical Changes

## Work Sheet

**KEY POINTS :**

- Changes are of two types- physical and chemical changes.
- No new substances are formed in the physical changes.
- Physical changes are temporary. The substance formed can be returned to original state.
- Chemical changes are permanent. One or more new substances are formed in a chemical change. The new substance formed cannot be returned to original state.
- Physical changes are reversible, chemical changes are irreversible.
- Melting of ice is a physical change.
- Magnesium oxide is a new substance formed on burning of magnesium. Magnesium hydroxide is another new substance. So, it is a chemical change.
- When carbon dioxide is passed through lime water, calcium carbonate is formed, which makes lime water milky.
- In chemical change, heat, light may be given off or absorbed. A change in smell or colour may take place, gas may be formed.
- Rusting of iron is a chemical change. For rusting, the presence of both oxygen and water (or water vapour) is essential.

- The process of depositing a layer of zinc on iron is called galvanization. It is used to prevent rusting.
- Large crystals of pure substances can be formed from their solutions. The process is called crystallisation. It is a physical change.

## Questions

1. Tick the correct answer : (1 mark each)

(i) Which of the following is a physical change?

(a) Rusting of iron (b) Curd from milk

(c) Melting of ice (d) Digestion of food

(ii) Which of the following is a chemical change?

(a) Burning of coal

(b) Photosynthesis

(c) Combustion of magnesium ribbon

(d) All of these

(iii) The new substance formed on burning of magnesium is-

(a) Oxygen (b) Magnesium oxide

(c) Magnesium hydroxide (d) None of these

(iv) The colour of copper sulphate is

(a) Violet (b) Green

(c) Colorless (d) Blue

(v) The colour of solution due to a reaction between copper sulphate and iron is

(a) Green (b) Blue

(c) Violet (d) Brown

(vi) Formula of lime water is-

(a) CaO (b) $Ca(OH)_2$

(c) $CaCO_3$ (d) $Mg(OH)_2$

(vii) Which of the following is a chemical change?

(a) Explosion of a firework (b) Germination of seed

(c) Formation of coal (d) All of these

(viii) Rusting can be prevented by-

(a) Crystallisation (b) Distillation

(c) Galvanization (d) None of these

(ix) Chemical formula of rust is-

(a) $Fe_2O_3$ (b) FeO

(c) $Fe_3O_4$ (d) None of these

(x) Which of the following is not correct for chemical change -

(a) Heat may be given off or absorbed

(b) Sound may be produced

(c) No colour change

(d) Evolution of gas

2. Fill in the blanks : (1 mark each)

(i) The brown layer deposited on iron is called _____.

(ii) The process in which new substances are formed is _____ change.

(iii) _____change is reversible.

(iv) In chemical change, heat may be _____ or _____.

(v) The process of depositing a layer of zinc on iron is called _____.

(vi) The colour of iron sulphate is _____.

3. Mention True/False : (1 mark each)

(i) Burning of magnesium ribbon is a physical change.

(ii) Burning of candle is both physical and chemical change.

(iii) When carbon dioxide is passed through lime water, it turns milky.

(iv) Crystallisation. It is an example of a chemical change.

(v) For rusting, the presence of both oxygen and water is essential.

4. Answer in one word : (1 mark each)

(i) What is the chemical formula of magnesium oxide?

_____

(ii) What kind of change is water evaporation?

_____

(iii) Name the gas formed when baking soda is added to vinegar.

_____

(iv) What is vinegar?

_____

(v) What kind of change is neutralization reaction?

_____

(vi) What is the chemical name of thotha?

_____

(vii) What the change in nature of substance due to chemical change?

_____

(viii) Name the gas evolved when carbon dioxide is passed through the lime water.

_____

(ix) Which metal is deposited on iron during galvanisation?

_____

(x) Name the process by which crystals of pure substances can be formed from their solutions.

_____

5. Answer the following questions : (2 marks each)

(i) Represent the reaction between magnesium oxide and water by chemical equation.

(ii) Name the brown deposit on the iron nail when an iron nail is dipped in the solution of blue vitriol to thotha. What kind of change is this?

(iii) Express the process of rusting by chemical equation.

(iv) Name the ways in which rusting can be prevented.

(v) What are the constituents of stainless steel?

6. Answer the following questions : (3/4 marks each)

(i) Write three differences between physical and chemical change.

(ii) Explain that both physical and chemical changes occur in the burning of candle.

7. Answer the question : (Marks - 5)

   (i) Define crystallisation process. How to prepare the crystal of copper sulphate (Thotha) in this process? (2+3=5)

## Answers

1. (i) (c) (ii) (d) (iii) (b) (iv) (d) (v) (a) (vi) (b) (vii) (d) (viii) (c) (ix) (a) (x) (c).
2. (i) rusting (ii) chemical (iii) Physical (iv) evolve or absorb (v) galvanization (vi) green
3. (i) F (ii) T (iii) T (iv) F (v) T (vi) F.
4. (i) MgO (ii) Physical change (iii) carbon di oxide (iv) Chemical change

   (v) Magnesium oxide (vi) Copper sulphate (vii) Chemical properties

   (viii) Calcium carbonate (ix) Zinc (x) Crystalisation
5. (i) $MgO + H_2O \rightarrow Mg(OH)_2$ (ii) Brown layer is copper. It is a chemical change.

## Chapter - 7

# Weather, Climate and Adaptations of Animals to Climate

## Work Sheet-1 Weather and Climate

**Key points :**

- Weather has profound effect on our lives.
- The day-to-day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind seed,etc., is called the weather at that place.
- Humidity is a measure of the moisture in air.
- Rainfall is measured by the rain gauge.
- The weather of a place changes day after day and week after week.
- The temperature, humidity, and other factors are called the elements of the weather.
- The maximum temperature of the day occurs generally in the afternoon while the minimum temperature occurs generally in the early morning.
- The time of sunrise and sunset is not same in every season.
- The average weather pattern taken over a long time, (say 25 years) is called the climate of the place.

- If the temperature at a place is high most of the time, then we say that the climate of that place is hot.
- All changes in the weather are caused by the sun.

## Questions

1. Tick the correct answer : (1 mark each)

   (i) Rain fall is measured by-

   (a) Thermometer (b) Barometre (c) Rain gauge (d) Aninometre

   (ii) Which of the following is not related to daily weather report-

   (a) Temperature (b) Pressure (c) Humidity (d) Rainfall

   (iii) The climate of a place is nearly-

   (a) 25 years (b) 10 years (c) 30 years (d) 20 years

2. Fill in tha gaps : (1 mark each)

   (i) Minimum temperature occurs generally in the _____ .

   (ii) Primary source of energy is _____ .

   (iii) Heavy rainfall occurs in _____climate region.

3. Mention True/ False: (1 mark each)

   (i) Weather is changed very rapidly.

   (ii) The climate of typical desert is _____ .

   (iii) Pressure is responsible for weather change.

4. Answer in one word : (1 mark each)

   (i) How long is the information in the weather report?

   (ii) Which state of India has the highest temperature most of the year?

5. Answer the following questions : (2 marks each)

   (i) What do you mean by weather?

   (ii) Define climate.

   (iii) What is the difference between sunset time in winter and summer ?

6. Prepare a weather forecast table for a week as below-

| Date | Highest temperature | Lowest temperature | Lowest humidity(%) | Highest humidity(%) | Rain fall (mm) |
|---|---|---|---|---|---|
| 01/06/2020 | 35.1°C | 25.3°C | 56 | 87 | 10 |
| 02/06/2020 | | | | | |
| 03/06/2020 | | | | | |
| 04/06/2020 | | | | | |
| 05/06/2020 | | | | | |
| 06/06/2020 | | | | | |
| 07/06/2020 | | | | | |

# Adaptations of Animals to Climate

## Work Sheet -2

**Key points :**

- Climate has a profound effect on all living organisms. Animals are adapted to survive in the conditions in which they live. These are the processes of evolution.
- Animals in the polar region are adapted to the extremely cold climate by having some special characteristics such as a layer of fat under the skin. e.g.- polar bear.
- Another well-known animal living in the polar region is the penguin. It is also white and merges well with the white background and has a lot of fat to protect it from cold. Penguins huddle together to remain protected from cold.
- Other animals living in the polar regions are many types of fishes, musk oxen, reindeers, foxes, seals, whales, and birds.
- Migratory birds are migrating to warmer regions when winter sets in. They come back after the winter is over.
- The tropical region has generally a hot climate. Because of the hospitable climatic conditions huge populations of plants and animals are found in the tropical rainforests.
- Red-eyed frog lives in the tropical rain forest which has developed sticky pads on its feet to help it climb trees on which it lives.
- The lion-tailed macaque (also called Beard ape) lives in the rainforests of Western Ghats. Its feature is the silver-white mane.
- Many adaptations are seen in animals living in the tropical rainforest.

- Another well-known animal of Indian tropical rainforest is the elephant. The elephant uses its trunk as a nose because of which it has a strong sense of smell.
- Large ears help the elephant to keep cool in the hot and humid climate of the rainforest.

## Questions

1. Tick the correct answer : (1 mark each)

(i) Which of the following lives in polar region?

(a) The elephant (b) Red-eyed frog

(c) Penguin (d) Leopards

(ii) Which of the following lives in tropical rain forest?

(a) Polar bear (b) Red-eyed frog

(c) Whales (d) Penguin

(iii) Which of the following is true for penguin?

(a) They huddle together (b) Their feet have webs

(c) They have a lot of fat (d) They are not good swimmers

(iv) Migratory birds come from –

(a) Canada (b) Siberia

(c) China (d) Malaysia

(v) Which help the elephant to keep cool ?

(a) Trunk (b) Teeth

(c) Ears (d) Nose

2. Fill in the blanks : (1 mark each)

(i) _____ have white fur.

(ii) The tropical region has generally _____.

(iii) Body-colour of penguin is _____

(iv) _____named Beard ape lives in the rainforests.

(v) The elephant uses _____as a nose.

3. Mention True/ False : (1 mark each)

   (i) Greenland is situated in tropical rain forest.

   (ii) Reindeers lives in polar region.

   (iii) Toucan has long tail.

   (iv) Red–eyed frog lives in water.

4. Answer in one or words : (1 mark each)

   (i) How many degree celsius can winter temperature drop in the polar region?

   (ii) Which animal huddle together to protect from cold?

   (iii) In which region does musk oxen live?

   (iv) What is the name of lion tailed macaque in the Western Ghats region?

   (v) With which organ do elephants take food?

5. Match the column :

| Column - A | Column - B |
|---|---|
| (i) Polar bear | (a) Silvery white |
| (ii) Penguin | (b) Long and large ears |
| (iii) Lion tailed macaque | (c) Fur layer |
| (iv) Elephant | (d) Feet have webs |

6. Answer the following questions : (2 marks each)

   (i) What is adaptation ?

   _____

   _____

   (ii) Write 3 adaption behavior of penguin.

   _____

   _____

(iii) Why does Red-eyed frog climb trees ?

_____

_____

7. Answer the following questions : (3/4/5 marks each)

(i) Explain how polar bears adapt to severe winters in the polar regions?

_____

_____

_____

(ii) Explain how elephants adapt themselves in the tropical rain forests.

_____

_____

_____

**Answers**

**Work Sheet-1**

1. (i) (c) (ii) (b) (iii) (a).
2. (i) morning (ii) The sun (iii) warm- moist
3. 3. (i) T (ii) T (iii) F.
4. (i) 24 hours (ii) Rajasthan

**Work Sheet-2**

1. (i) (c) (ii) (b) (iii) (d) (iv) (b) (v) (c)
2. (i) polar bear (ii) warm (iii) white (iv) macaque (v) trunk
3. 3. (i) F (ii) T (iii) T (iv) F
4. (i) -37ºC (ii) penguin. (iii) polar region (iv) macaque (v) trunk
5. 5. (i) - (c) (ii) - (d) (iii) - (a) (iv) - (b)
6. (ii) Merges well with the white background and have lot of fat to protect it from cold. Penguins huddle together to protect from cold.
7. See NCERT Science book.

## Chapter - 8

# Winds, Storms and Cyclone

## Work Sheet-1 Wind

**Key Points :**

- Air exerts pressure.
- Increased wind speed is, indeed, accompanied by a reduced air pressure.
- Air moves from the region where the air pressure is high to the region where the pressure is low. The greater the difference in pressure, the faster the air moves.
- Air expands on heating and contracts on cooling.
- The moving air is known as wind.
- The winds to flow from the oceans towards the land are known as monsoon winds. In winter, the direction of the wind flow gets reversed; it flows from the land to the ocean.
- The monsoon winds from the oceans carry water and bring rain.
- Southwest monsoon flows in summer and northwest monsoon in winter.
- Farmers in our country depend mainly on monsoon rains for their harvesting.

1. Tick the correct answers : (1 mark each)

   (i) Leaves of trees, banner or flags flutter when wind is blowing. Why?

   (a) Lighter than air (b) Air exerts pressure

   (c) Air occupies space (d) Air is a mixture of gases

   (ii) Air moves fast when

   (a) Pressure is same (b) No pressure

   (c) Difference in pressure is high (d) None of these

2. Fill in the blanks : (1 mark each)

   (i) Air _____ on heating

   (i) The moving air is called _____.

   (ii) High speed wind _____ air pressure.

   (iii) Air moves from a region of _____ pressure to a region of _____ pressure.

3. Mention True/ False : (1 mark each)

   (i) Air contracts on heating. ☐

   (ii) Air exerts pressure. ☐

   (iii) Warm air is lighter than cool air. ☐

4. Answer in one or two words : (1 mark each)

   (i) If the wind speed increases, does the air pressure increase or decrease?

   (ii) What is the meaning of "monsoon"?

   (iii) Which wind causes rain?

   (iv) In which season the North-West monsoon winds blow?

5. Answer the following questions : (2 marks each)

   (i) Write the causes of wind.

   (ii) What is monsoon?

   (iii) How does monsoon wind cause rainfall?

6. Air exerts pressure. Prove it with the help of an experiment. (Marks 5)

# Storm and Wind

## Work Sheet -2

**Key points –**

- Thunderstorms develop in hot, humid, tropical areas like India very frequently.
- The rising temperatures produce strong upward rising winds.
- If a storm is accompanied by lightning, we must take the precautions.
- High-speed winds and air pressure difference can cause cyclones.
- The centre of a cyclone is a calm area. It is called the eye of the storm. The diameter of the eye varies from 10 to 30 km .
- Cyclones can be very destructive.
- A cyclone is known by different names in different parts of the world. It is called a 'hurricane' in the American continent.
- High-speed winds accompanying a cyclone can cause tremendous loss of life and property.
- A tornado is a dark funnel shaped cloud that reaches from the sky to the ground.
- The whole coastline of India is vulnerable to cyclones, particularly the east coast.
- The instrument that measures the wind speed is called an anemometer.
- It has become easier to monitor cyclones with the help of advance technology like satellites and radars.

## Questions

1. Tick the correct answers : (1 mark each)

   (i) Which of the following places is most likely to be affected by a cyclone?

   (a) Mumbai (b) Puri

   (c) Goa (d) Porbandar

   (ii) The calm area of the storm is called

   (a) Eye (b) Typhoon

   (c) Tornado 9 (d) None of these

   (iii) Which of the following is odd?

   (a) Cyclone (b) Hurricane

   (c) Typhoon (d) Monsoon

   (iv) The diameter of the eye varies-

   (a) from 10 to 15 km (b) from 20 to 25 km

   (c) from 10 to 30 km (d) 150 km

   (v) Cyclone alert can be given-

   (a) before 12 hour (b) before 6 hour

   (c) before 48 hour (d) before 24 hour

2. Fill in the blanks : (1 mark each)

   (i) The rising temperatures produce strong _____ winds.

   (ii) In Japan cyclone is called _____.

   (iii) A violent tornado can travel at speeds of about _____.

   (iv) It has become easier to monitor cyclones with the help of advance technology like _____ and _____.

3. Mention True/ False : (1 mark each)

   (i) High-speed winds and air pressure difference can cause cyclones.

   (ii) The centre of a cyclone is a calm area.

(iii) The coastline of India is not vulnerable to cyclones.

(iv) In our country tornado are very frequent.

4. Answer in one or two words : (1 mark each)

(i) What is the rotating mass of air in the atmosphere during cyclone?

_____

(ii) What is the name of cyclone in the American continent?

_____

(iii) Which areas in India are vulnerable to cyclone?

_____

(iv) Name the instrument that measures the wind speed.

_____

(v) What happens due to very low pressure?

_____

5. Answer the following questions : (2 marks each)

(i) What is Tornado?

_____

(ii) Write the ways to protect from Tornado.

_____

(iii) Mention the factors that help in generating cyclones.

_____

6. Match the column A with column B :

| Column A | Column B |
|---|---|
| (i) Wind | (a) Due to very low pressure system |
| (ii) Cyclone | (b) Carries water vapour |
| (iii)Tornado | (c ) Moving air |
| (iv) Monsoon | (d) Reaches from the sky to the ground |

7. Answer the following questions : (Marks - 3/4)

   (i) If a storm is accompanied by lightning, what precautions should be taken?

   _____

   _____

   _____

   (ii) What is cyclone? What destruction is caused by cyclone?

   _____

   _____

   _____

8. Explain the structure of cyclone. (Marks - 5)

   _____

   _____

   _____

   _____

**Answers**

**Work Sheet-1**

1. (i) (b) (ii) (c) (iii) (c).
2. (i) expanded (ii) wind (iii) reduces (iv) high pressure, low pressure.
3. (i) F (ii) T (iii) F.
4. (i) Decreases (ii) Season (iii) Monsoon (iv) Winter season
6. (i) see NCERT Science book.

**Work Sheet-2**

1. i) (c) (ii) (a) (iii) (d) (iv) (c) (v) (d)
2. (i) upward (ii) typhoon (c) 300 Km (d) satellites and radars
3. (i) T (ii) F (iii) F (iv) F (v) T.
4. (i) 10-15 km (ii) hurricane (iii) east coastal (iv) anemometer (v) cyclone

6. (i) - (c) (ii) - (a) (iii) - (d) (iv) - (b).
7. (i) and (ii) see NCERT science book
8. see NCERT science book

# Chapter - 9

# SOIL

## Work Sheet-1

**Key points :**

- Soil is very important for life on the earth.
- Polythene and plastics pollute the soil. They also kill the organisms living in the soil.
- Soil is composed of distinct layers. These layers are referred to as horizons.
- The rotten dead matter in the soil is known as humus. The uppermost horizon is generally dark in colour as it is rich in humus and minerals. Humus increases the fertility of soil.
- Different types of soil are clayey, loamy and sandy.
- The best type of soil for growing plants is loamy soil. Loamy soil is a mixture of sand, clay and another type of soil particle known as silt.
- The water holding capacity of clayey soil is maximum. Clayey and loamy soil are suitable for growing wheat, gram and paddy. Cotton is grown in sandy loamy soil. Clayey soil is best for making pots and toys.
- Percolation rate of water is different in different types of soil. It is highest in the sandy soil and least in the clayey soil.

- Water holding capacity of soil is called soil moisture.
- Soil is affected by wind, rainfall, temperature, light and humidity.
- The removal of land surface by water, wind or ice is called soil erosion.

## Questions

1. Tick the correct answer : (1 mark each)

(i) Which horizon of soil contains maximum minerals?

(a) A horizon (b) B horizon (c) C horizon (d) D horizon

(ii) Which horizon of soil contains maximum humus?

(a) A horizon (b) C horizon (c) B horizon (d) None of these

(iii) The water holding capacity is maximum in

(a) Sandy soil (b) Clayey soil (c) Loamy soil (d) None of these

(iv) Water holding capacity of soil is called-

(a) Horizon (b) Absorption (c) Soil moisture (d) Humus

(v) Which physical property of soil is very important to us?

(a) Texture (b) Water holding capacity

(c) Both of thsese (d) None of these

2. Fill in the blanks : (1 mark each)

(i) A dark soil is mainly rich in_____.

(ii) Types of soil are clayey, _____and sandy.

(iii) A vertical section through different layers of the soil is called the _____.

(iv) _____soil is used to make toys.

3. Mention True/ False : (1 mark each)

(i) The rotten dead matter in the soil is known as humus.

(ii) Upper portion of soil contains air.

(iii) Clayey soil contains maximum air.

(iv) Cotton is grown in sandy loamy soil.

(v) Soil is not affected by temperature and light.

4. Answer in One word : (1 mark each)

(i) What is termed as different layers of soil?

_____

(ii) Which layer of soil contains rock?

_____

(iii) What type of soil has maximum water holding capacity?

_____

(iv) What type of soil is best for growing paddy and gram?

_____

(v) Which factors determine the water holding capacity of soil?

_____

(vi) Which soil would have the highest percolation rate?

_____

(vii) Which soil would have the lowest percolation rate?

_____

(viii) What is the inorganic constituent of soil?

_____

(ix) What is the colour of humus?

_____

(x) Which soil is suitable for lentils?

_____

5. Answer the following questions : (2 marks each)

(i) Name the different horizons of soil.

(ii) Write two peroperties of sandy soil.

(iii) Write the importance of trees in the formation of soil.

(iv) Write the constituents of loamy soil. Where does it deposit?

(v) What is soil erosion?

(vi) What is water holding capacity of soil?

6. Match the column A with column B

| Comumn A | Column B |
|---|---|
| i. Slit | a. Size of particles ranging from 0.05 to 2.00 mm |
| ii. Sand | b. Size of particles are more than 2.00 mm |
| iii. Clay | c. Size of particles ranging from 0.005 to 0.05 mm |
| iv. Rock | d. Size of particales are less than 0.005 mm |

7. Answer the following questions : (3/4 marks each)

(i) What is soil profile? Draw a diagram of soil profile.

(ii) Write differences between clayey soil and loamy soil.

(iii) Write the name of crops grow in clayey soil, loamy soil and sandy soil respectively.

(iv) How to control soil erosion?

(v) Describe one method to determine percolation rate of water in soil.

8. HOTS-

150 g of a sample of soil is dried in sunlight by heating. The weight of dried soil is then 130 g. find the percentage of water in that sample of soil.

**Answers**

1. (i) (b) (ii) (a) (iii) (b) (iv) (c) (v) (c) (vi) (a)

2. (i) humus (ii) clayey (iii) soil profile (iv) Clayey soil (v) sandy soil

3. (i) Ture (ii) True (iii) False (iv) True (v) False

4. (i) Horizontal layer (ii) Clayey (iii) Sandy soil (iv) Clayey and loamy soil (v) Size of particle (vi) Sandy soil

(vii) Clayey soil (viii) Minerals (ix) Brown (x) Loamy soil

6. (i) (c) (ii) (a) (iii) (d) (iv) (b)

7. See NCERT science book.

## Chapter - 10

# Respiration in Organisms

### Work Sheet-1

## Respiration

- The smallest, microscopic structural and functional unit of organism is cell. Each and every cell performs a specific function. Energy is required for the functioning of cells.
- Energy is stored in food. During respiration this stored energy is released. This released energy in turn helps the organism to perform different life processes.
- Within the cell, in presence of oxygen food materials (mainly glucose) are broken down into carbon dioxide and water as by products and energy is released. This process occur within the cell and hence called cellular respiration.
- Respiration are of two types - aerobic respiration and anaerobic respiration.
- The types of respiration in which food material, i.e. glucose is completely broken down within the cell in presence of oxygen to release sufficient amount of energy is called aerobic respiration. Aerobic respiration occurs in all higher class plants and animals.
- The types of respiration in which food material, i.e. glucose is partially broken down within the cell in absence of oxygen to release a little amount of energy

is called anaerobic respiration. This type of respiration occurs in some lower class organisms such as yeast, some bacteria, tape worm, etc.

- During long exercise or hard work, anaerobic respiration occurs in our muscles also. In this time lactic acid is produced and accumulates in muscle cells. As a result of the accumulation of lactic acid in muscle cells muscle cramps occur.
- During anaerobic respiration in plant cells, ethyl alcohol and carbon dioxide is produced.

## Questions

1. Fill up the gaps : (1 mark each)

   i) The structural and functional unit of organism is **cell** .

   ii) In _____ cells of human body anaerobic respiration occur.

   iii) In absence of _____ anaerobic respiration occurs.

   iv) Within the cell food is broken down to release _____.

2. Mention True / False against each statement: (1 mark each)

   i) Energy is stored within food. ***Answer:- True.***

   ii) Living things perform excretion to get energy.

   iii) In anaerobic respiration maximum energy is released.

   iv) We get energy from food.

   v) For the functioning of cells energy is required.

3. Tick the correct answers : (1 mark each)

   i) Aerobic respiration produces -

   a) Alcohol √ b) Water and $CO_2$

   c) Lactic acid d) $O_2$ and water.

   ii) During heavy exercise, due to anaerobic respiration, break down of glucose in muscle cells produces -

   a) Alcohol and $CO_2$ b) Lactic acid & $CO_2$

   c) $H_2O$ & $CO_2$ d) Only lactic acid.

(iii) Aerobic respiration is impossible -

a) in presence of $CO_2$ b) in presence of $O_2$

c) in absence of $O_2$ d) in absence of $CO_2$

(iv) Anaerobic respiration occurs -

a) in yeast b) in all bacteria

c) in bird d) in human

(v) The reason of using yeast in wine industry is -

a) Alcohol is produced in aerobic process.

b) Alcohol is produced in anaerobic process.

c) Lactic acid is produced in anaerobic process.

d) $CO_2$ is produced in aerobic process.

4. Answer in one or two words : (1 mark each)

i) In which biological process energy stored in food is released ?

***Answer : Respiration.***

ii) Which gas is used in respiration ?

iii) Name the compound produced other than alcohol during anaerobic respiration.

iv) Which type of respiration occurs in plants ?

v) Name the main food material oxidized during respiration ?

vi) Name a microscopic organism in which anaerobic respiration occurs.

vii) Which compound is produced in animal cells during anaerobic respiration?

5. Match the columns :

| | |
|---|---|
| Yeast | increase in breathing |
| Muscle | ethyl alcohol |
| Aerobic respiration | lactic acid |
| Exercise | complete oxidation of food materials |

6. Answer the following questions : (2 marks each)

i) What is cell ?

***Answer : Cell is the smallest, microscopic structural and functional unit of living organisms which is made up of nucleus and cytoplasm and is surrounded by a plasma membrane.***

ii) Define aerobic respiration.

iii) Mention four functions of cell.

iv) What do you mean by cellular respiration ?

v) What do you mean by anaerobic organism ? Give example.

vi) Write the reaction of aerobic respiration.

vii) Mention the reaction occurs in muscle cells during anaerobic respiration.

7. Answer the following questions : (3 marks each)

i) What is anaerobic respiration ? Write the reactions of anaerobic respiration in plant cells and animal cells.

Answer: The type of respiration in which food materials mainly glucose is partially oxidized within the cell in absence of oxygen to form ethyl alcohol and $CO_2$ (in plants) or lactic acid (in animals) as by products and a little amount of energy is released is called anaerobic respiration.
Reactions: In animals : Glucose $\rightarrow$ Lactic acid + Energy.

In plants: Glucose $\rightarrow$ Ethyl alcohol + $CO_2$ + Energy.

ii) Why muscle cramps occur during heavy exercise or hard work ? Why do we get relief from cramps after a hot water bath or a massage ?

iii) Write four differences of aerobic and anaerobic respiration.

iv) Why anaerobic respiration occurs in leg muscle after long cycling ?

**Answers**

1. (i) cell (ii) muscle (iii) oxygen (iv) energy

2. (i) True (ii) False (iii) False (iv) True (v) True

3. (i) (b) (ii) (d) (iii) (c) (iv) (a) (v) (b)

4. (i) Respiration (ii) Oxygen (iii) $CO_2$ (iv) Aerobic respiration
(v) Glucose (vi) Yeast (vii) Lactic acid

# Breathing

## Work Sheet -2

- Breathing means taking in air rich in oxygen into the lungs and giving out air rich in carbon dioxide with the help of respiratory organs. Breathing has two stages - **Inspiration** and **Expiration**.
- The number of times a person breathes in a minute is termed as the breathing rate.
- The normal breathing rate of a healthy adult human is about 15 - 18 times per minute.
- During heavy work or long exercise the rate of breathing increases.
- The parts of human respiratory system are nostrils, nasal passage, pharynx, trachea, bronchus, bronchiole and lungs.
- Lung is our main respiratory organ. Besides this, ribs, diaphragm and abdominal muscles also help in breathings.
- The respiratory organ of cow, sheep, goat, toad, snake, birds etc., is lung. Insects like cockroach respire through spiracles and trachea. Earthworm respire through wet skin. The respiratory organ of aquatic animal like fish is gill.
- Plants also respire. They perform gaseous exchange through the stomata of leaf.

### Questions

1. Fill up the gaps : (1 mark each)

   i) Taking in air rich in oxygen into the lungs is called **inspiration** .

   ii) The muscular sheet that forms the floor of the chest cavity is called _____.

iii) Cockroach takes in oxygen from the air through _____.

iv) If we dissolve _____ gas in transparent lime water it becomes white.

2. Mention True / False against each statement : (1 mark each)

i) The respiratory organ of earthworm is wet skin. ***Answer:- True.***

ii) Breathing rate of baby is less.

iii) Breathing stops while sleeping.

iv) During expiration, air rich in carbon dioxide is pushed out from the lungs.

3. Tick the correct answer : (1 mark each)

i) Fish breathes by -

(a) Spiracle (b) Gill

(c) Trachea √ (d) Lung

ii) The rate of breathing is maximum -

(a) in normal state (b) during rest

(c) after 10 minutes walk (d) after 100 minutes run

iii) The following organ is the part of both the respiratory system and alimentary system -

(a) nasal passage (b) pharynx

(c) trachea (d) stomach

iv) The organ affected by smoking is -

(a) lung (b) stomach

(c) ribs (d) diaphragm

4. Answer in one or two words : (1 mark each)

i) What is the main respiratory organ of human ? ***Answer : Lungs.***

ii) How much air a person can hold in the lungs ?

iii) Through which organs gaseous exchange in plant take place ?

iv) Name a life risking disease related to smoking.

5. Answer the following questions : (2 marks each)

   i) Define breathing.

   ***Answer: The process of taking in air rich in oxygen into the lungs from the atmosphere and pushing out of air rich in carbon dioxide from the lungs to the atmosphere is called breathing.***

   ii) What do you mean by inspiration and expiration ?

   iii) What is breathing rate? Mention the normal breathing rate of an adult human.

   iv) What role do the fur present in our nostrils perform ?

6. Answer the following questions : (3 marks each)

   i) When a person released his breath after holding it for some times, he had to breath heavily - why ?

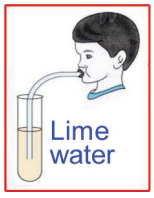
   ***Answer : While the person held the breath, the oxygen taken earlier is completly used up for breaking down of food during cellular respirations. As a result oxygen deficiency occurs. In order to supply more oxygen to fulfil the demand of oxygen, the rate of breathing increases. Thus he had to breathe heavily.***

   ii) Why do we have to breathe heavily after running fast ?

   iii) Why do we sneeze when we inhale dusty air ? What is the benefit of sneezing ?

   iv) Why should you cover your nose when you sneeze ?

   v) Some amount of transparent lime water is taken in a clear test tube. Now blow gently through the lime water by a straw. Is there any change in the colour / appearance of lime water? What does it prove?




   vi) Tell your friend to run 15 minutes. After finishing run you observe that he breath 125 times in 5 minutes. Calculate the rate of breathings. Now compare this calculated rate with the normal breathing rate.

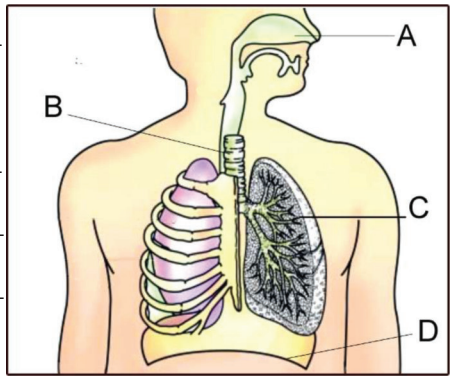
   vii) Which system of human body is being shown by the diagram ? Write the name of the parts indicated as A, B, C, D ?

A _____

B _____

C _____

D _____




7. Draw a labelled diagram of human respiratory system. (4/5 marks)

8. Describe the process of breathing. (4/5 marks)

| Answers | | | |
|---|---|---|---|
| 1. (i) inspiration | (ii) diaphragm | (iii) spiracle | (iv) $CO_2$ |
| 2. (i) True | (ii) False | (iii) False | (iv) True |
| 3. (i) (b) | (ii) (d) | (iii) (b) | (iv) (a) |
| 4. (i) Lungs | (ii) 6 litre | (iii) Stomata | (iv) Lung cancer |

## Chapter - 11

# Transportation in Animals and Plants

## Work Sheet-1 Transportation in Animals

- The process by means of which food materials, oxygen, carbon dioxide, water, hormones, excretory waste products etc., are transported from one part to another part of the body is called Transportation.
- Blood is a type of fluid connective tissue which is red coloured and consists of plasma and blood corpuscles.
- Blood corpuscles are of mainly three types -
  (i) Red blood corpuscles(RBC) or Erythrocytes,
  (ii) White blood corpuscles(WBC) or Leukocytes and
  (iii) Platelets or Thrombocytes.
- Due to the presence of haemoglobin within the RBC, the colour of blood is red.
- Blood is circulated through mainly two types of blood-vessels; viz. artery and veins.
- Heart is the main pumping organ of blood circulatory system.
- The rhythmic contraction and relaxation of the heart is called as heart beat. The rate of heart beat in human is about 72 times per minute.

## Questions

1. Fill up the gaps : (1 mark each)

   i) Blood is a **fluid** connective tissue.

   ii) Blood vessels are of mainly two types. They are _____and _____.

   iii) In _____ blood corpuscles haemoglobin is present.

   iv) _____ helps in blood coagulation.

   v) Harvey was ridiculed and was called _____.

2. Mention True / False against each statement : (1 mark each)

   i) Blood transports digested food particles from the stomach of alimentary canal to different parts of the body. ***Answer:- False.***

   ii) Pulmonary vein carries oxygenated blood.

   iii) Valve is present in veins.

   iv) Blood pressure of vein is greater than that of artery.

3. Tick the correct answers : (1 mark each)

   i) The blood component that protect our body, from disease infections is -

   a) Plasma  b) RBC

   √ c) WBC  d) Platelet.

   ii) Which statement of the following is correct -

   a) The veins carry oxygenated blood

   b) The arteries carry deoxygenated blood

   c) The pulmonary vein carries blood rich in $CO_2$

   d) The pulmonary artery carries blood rich in $CO_2$

   (iii) Which statement of the following is incorrect -

   a) The wall of artery is thick.

   b) Oxygenated blood returns back to the heart from different parts of the body.

   c) Valves are present in veins.

d) Inter-auricular and inter-ventricular septum protect oxygenated and de-oxygenated blood from mixing.

iv) During expiration -

a) Air rich in oxygen is taken in.

b) Air rich in carbon dioxide is taken in.

c) Air rich in oxygen is pushed out.

d) Air rich in carbon dioxide is pushed out.

4. Answer in one or two words: (1 mark each)

i) Name the fluid protein of blood.

***Answer: Plasma.***

ii) Mention the pulse rate of human.

iii) Which instrument used to hear heart beat ?

iv) What is the relation between the heart rate and pulse rate ?

v) Name two animals which possess no circulatory system.

vi) Who discovered blood circulatory system ?

5. Answer the following questions : (2 marks each)

i) What is transportation / circulation ?

***Answer: The process by means of which the essential substances such as food materials, oxygen, carbon dioxide, water, hormones excretory waste products, etc., are transported from one part to another parts of the body is called transportation / circulation.***

ii) What is the significance of circulation in the organisms.

iii) Define circulatory system.

iv) Name the components of blood.

v) Why is colour of blood red ?

vi) Mention the function of haemoglobin.

vii) What is pulse ?

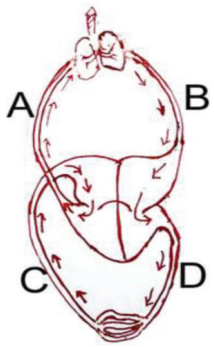
viii) Which types of blood is carried by the blood vessels marked as A, B, C, D ?

A _____

B _____

C _____

C _____




ix) What is heart-beat ? Mention the rate of heart-beat of human.

6. Answer the following questions : (3 marks each)

i) Define blood vessels. Mention its types with function of each.

Answer: The vessels connected to the heart through which blood is circulated throughout the body are called blood vessels. There are mainly two types of blood vessels -

(1) Vein and (2) Artery.

Function:

(1) The function of vein is to return blood back to the heart from the different parts of the body.

(2) The function of artery is to circulate blood to different parts of the body from the heart.

ii) Differentiate between artery and vein.

iii) Draw a labelled diagram of human heart.

iv) Give a schematic representation of blood circulation through human heart.

**Answers**

1. (i) fluid (ii) artery, vein (iii) red (iv) Platelet (v) circulator

2. (i) False (ii) True (iii) True (iv) False

3. (i) (c) WBC (ii) (d) The pulmonary artery carries blood rich in $CO_2$

(iii) (b) Oxygenated blood returns back to the heart from different parts of the body

(iv) (d) Air rich in carbon dioxide is pushed out

4. (i) Plasma (ii) 72 times/ minute (iii) Stethoscope

(iv) Rate of both are equal (v) Sponge, hydra (vi) Willium Harvey

# Transportation in Plants

## Work Sheet -2

- There are two types of conducting tissues found in plants - xylem and phloem.
- Water and minerals, absorbed by the root hairs are transported to the leaves through xylem tissue.
- The food produced by the leaves is transported to each and every organ of the plant through the phloem tissue.
- The excess portion of water absorbed by the root is eliminated to the atmosphere through the stomata of leaf in the form of water vapour. This process is called transpiration.
- The transpiration of water through the leaves generates a upward suction pull, which can pull water absorbed by the root to a great height in the tall trees. This upward suction pull generated is called transpiration pull. Transpiration also cools the plants.

### Questions

1. Fill up the gaps : (1 mark each)

   i) The water and minerals absorbed by the root is transported to the leaf through **xylem** tissue.

   ii) The produced food is transported from the leaf to different organs of the tree through _____ tissue.

   iii) Excess portion of water absorbed by the root is evaporated through the _____ of leaf.

   iv) The upward suction pull, created due to _____ can pull water absorbed by the root to great height in the tall trees.

2. Answer the following questions : (2 marks each)

i) Name two transporting tissues found in plants with their main function.

***Answer: The two transporting tissues found in plants are xylem and phloem.***

***The function of xylem is to transport water and minerals absorbed by root to the leaves.***

***The function of phloem is to transport prepared food from leaves to each and every organ of the plants.***

ii) Define transpiration.

***Answer: The upward suction pull, created due to transpiration which can pull water absorbed by the root to a great height in the tall trees is called transpiration pull.***

iii) Mention two importance of transpiration.

iv) Write two functions of stomata.

v) Mention two differences between xylem and phloem.

vi) What is transpiration pull ?

| **Answers** |
|---|
| 1. (i) xylem (ii) phloem (iii) stomata (iv) transpiration |

# Excretion in Animal Body

## Work Sheet -3

- During metabolic reactions in our cells, numbers of materials are produced as products. Among them some are essential for our body. Some other products are not only non-essential but also toxic and harmful. So, these harmful toxic metabolic waste products should be eliminated from our body immediately.
- The biological process involved in the removal of these non essential harmful toxic metabolic waste products from the body is called excretion.
- The process of excretion is carried out by excretory system. The parts of excretory system are- two kidneys, two ureters, a urinary bladder and urethra.
- Kidney is the main excretory organ. The kidney filters the excretory waste materials present in blood and eliminates out from the body in the form of urine.
- The main excretory waste material present in urine is urea.
- An adult human being normally excretes 1 - 1.8 litres of urine daily.
- The waste products are also eliminated through sweat. Salts and water are eliminated from the body through sweat.

### Questions

1. Fill up the gaps : (1 mark each)

   i) Aquatic animals like fishes excrete cell waste as **ammonia** .

   ii) The urine consists of _____ percent of water.

   iii) The useful substances are _____ back into the blood from the kidney.

   iv) Evaporation of sweat from our body causes _____ .

2. Mention True / False against each statement : (1 mark each)

   i) $CO_2$ is a waste material of animals. ***Answer: True***

   ii) All the materials produced by the cells are waste products.

   iii) The kidney acts as filter.

   iv) The way in which waste chemicals are removed from the body depends on the availability of water.

3. Answer the following questions : (1 mark each)

   i) Name the main excretory product present in urine. ***Answer : Urea.***

   ii) Mention the amount of urine excreted out by an adult human daily.

   iii) Mention the percentage of urea present in urine.

   iv) Name the components of sweat.

4. Tick the correct answers : (1 mark each)

   i) The undigested portion of food is eliminated out from the body as -

   a) Urine √ b) Stool

   c) Sweat d) Vapour

   ii) The main excretory organ in human is -

   a) Ureter b) Urinary bladder

   c) Kidney d) Urethra

   iii) Urine is stored in -

   a) Kidney b) Ureter

   c) Urethra d) Urinary bladder

   iv) Uric acid is excreted by -

   a) Human b) Snakes

   c) Cows d) Fishes

5. Answer the following questions : (2 marks each)

   i) Define excretion.

***Answer : The biological process involved in the removal of non essential harmful toxic metabolic waste products from the body is called excretion.***

ii) What is excretory system ?

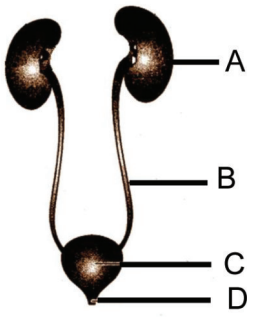
iii) Name the parts of human exceretory system.

iv) What do you mean by 'artificial kidney' ?

v) What is dialysis ?

vi) Mention the components of urine with amount.

vii) Name the parts indicated in the diagram.




A _____

B _____

C _____

D _____

**Answers**

1. (i) ammonia (ii) 95 (iii) absorbed (iv) cooling
2. (i) True (ii) False (iii) True (iv) True
3. (i) Urea (ii) 1 - 1.8 ltrs. (iii) 2.5 % (iv) Water and Salts
4. (i) Stool (ii) Kidney (iii) Urinary bladder (iv) Snakes

## Chapter - 12

# Reproduction in Plants

## Work Sheet-1 Reproduction in Plants

- Organisms produce new individuals through reproduction.
- The biological process by means of which organisms produce new offsprings similar to themselves and maintain their lineage is called reproduction.
- Plants reproduce through different modes - Vegetative, asexual and sexual.
- Root, stem, leaf, bud, etc., are the vegetative parts of plants. Flower is the reproductive part of plants.
- The flowers may be unisexual or bi-sexual.
- Plants perform vegetative propagation through cutting, budding, fragmentation, etc.
- Asexual reproduction is carried out by spore formation or fission.
- Spore is the unit of asexual reproduction.
- Sexual reproduction occurs through the fusion of two germ cells or gametes. Gametes are of two types- male gamete or sperm and female gamete or ovum/ egg.
- During sexual reproduction the fusion of male and female gamete is called fertilization. Zygote is produced through fertilization. From the zygote, embryo is developed.

- After fertilization the ovary of flower is developed into a fruit, the ovule is developed into a seed. Within the seed, embryo (future plant) is present.
- Dispersal of seed is carried out by water, air or animal.
- Transfer of pollen grains from the anther to the stigma of flower is called pollination. Pollination is of two types - Self pollination and cross pollination.

## Questions

1. Fill up the gaps : (1 mark each)

   (i) Root, stem, leaf, bud, etc., are the **vegetative** parts of plants.

   (ii) Cutting is a type of _____ propagation.

   (iii) The unit of asexual reproduction is _____.

   (iv) Yeasts perform vegetative reproduction through _____.

   (v) Transfer of pollen grains to the stigma of the same flower is called _____.

   (vi) Fusion of two types of gametes is called _____.

   (vii) The matured ovary is called _____.

   (viii) In palm trees _____ pollination occurs.

2. Write True or False : (1 mark each)

   (i) Bryophyllum can reproduce by leaves. ***Answer :*** ***True***

   (ii) Fusion of two gametes occur in asexual reproduction. ☐

   (iii) Potato is a modified stem. ☐

   (iv) Pollen grains are produced in the sporangium. ☐

   (v) Cross pollination occurs within the same flowers. ☐

   (vi) By the process of fertilization zygote is produced. ☐

   (vii) After fertilization ovule of flower is converted into a fruit. ☐

3. Tick the correct answers : (1 mark each)

   (i) Reproduction through spore formation is called –

   (a) Vegetative reproduction √ (b) Asexual reproduction

   (c) Sexual reproduction (d) Parthenogenesis

(ii) The type of vegetative reproduction performed by aquatic algae is –

(a) Cutting (b) Budding

(c) Fragmentation (d) Spore formation

(iii) Sweet potato is a type of modified –

(a) Stem (b) Root

(c) Bud (d) Seed

(iv) The sexual reproductive part of plant is –

(a) Leaf (b) Stem

(c) Root (d) Flower

(v) The organism reproducing through spore formation is –

(a) Ginger (b) Potato

(c) Fungi (d) Bryophyllum

(vi) Fertilization is related to –

(a) Vegetative reproduction (b) Asexual reproduction

(c) Sexual reproduction (d) Parthenogenesis.

4. Answer in one or two words : (1 mark each)

(i) Which is the unit of sexual reproduction ?

***Answer: Germ cell or gamete.***

(ii) Which type of reproduction occurs in China rose (Hibiscus) plant ?

(iii) Which part of flower is developed into a fruit ?

(iv) Which type of pollination occurs in papaya tree ?

(v) Name the parts of a stamen.

(vi) Give an example of a juicy fruit.

(vii) From which portion of stem leaf is produced ?

(viii) Name a plant which produces either male flower or female flower.

(ix) From which type of bud flower is produced ?

(x) Name the largest flower bud.

5. Answer the following questions : (2 marks each)

(i) Define reproduction.

***Answer: The biological process by means of which organisms produce new off springs similar to themselves and maintaining their lineage is called reproduction.***

(ii) What is node ?

(iii) What is fertilization ?

(iv) What is zygote ?

(v) Define sexual reproduction with example.

(vi) Define asexual reproduction with example.

(vii) What is fruit ?

(viii) Give examples of unisexual and bisexual flowers.

(ix) Name three plants which reproduce by spores.

(x) Why axillary buds are also called as vegetative bud ?

6. Differentiate between the following : (2 marks each)

(i) Sexual reproduction and asexual reproduction.

| Sexual reproduction | Asexual reproduction |
|---|---|
| (1) Involves two parents | (1) Involves one parent |
| (2) Occurs through gamete formation | (2) Occurs through spore formation or by division |
| (3) Ferlitization takes place | (3) Fertilization does not take place |
| (4) Variation occurs | (4) Variation does not take place |
| (5) Occurs in higher organisms | (5) Occurs in lower organisms |

(ii) Self pollination and cross pollination.

(iii) Anther and pistil.

7. Answer the following questions : (3/4 marks each)

(i) What is bud ? Mention the location of the axillary bud.

***Answer: Bud is the very small, compact, undeveloped young shoot produced from the apex or axil of the stem. Axillary bud is situated at the point of attachment of the leaf at the node i.e., in the axil of stem.***

(ii) What do you mean by vegetative propagation ? Name three modes of vegetative propagation with examples.

(iii) Why flowers is referred to as the reproductive part of plant ?

(iv) Mention three advantages of vegetative reproduction.

(v) Mention three necessity of seed dispersal.

(vi) What is bud ? Describe the budding process in yeast with suitable diagram.

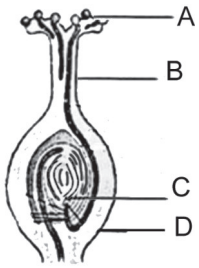
8. Observe the given diagram carefully. Mention the name of the parts indicated as A, B, C, D.

A _____

A _____

A _____

A _____




9. Match the following :

| | |
|---|---|
| (a) Fertilization | (i) Asexual reproduction |
| (b) Yeast | (ii) Potato |
| (c) Eye | (iii) Aquatic algae |
| (d) Fragmentation | (iv) Bud |
| (e) Spore | (v) Sexual reproduction |

**Answers**

1. (i) vegetative (ii) vegetative (iii) spore (iv) self polllination
2. (i) True (ii) False (iii) True (iv) False
   (v) False (vi) True (vii) False
3. (i) Asexual (ii) Fragmentation (iii) Root (iv) Flower (v) Fungi
   (vi) Sexual reproduction
4. (i) Germ cells or gamete (ii) Vegetative reproduction (iii) Ovary
   (iv) Cross pollination
   (v) Anther and filament (vi) Mango (vii) Node
   (viii) Palm, papaya (ix) Floral bud (x) Cauliflower

# Chapter - 13

## Work Sheet

# Motion and Time

### Synopsis of the Chapter

- Speed of objects help us to decide which one is moving faster than the other.
- The distance moved by an object in a unit time is called its speed.
- The speed of an object is the distance travelled divided by the time taken to cover that distance.

  Its basic unit is metre per second (m/s).

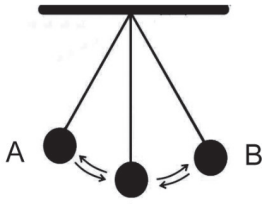
- $\text{Speed} = \frac{\text{Total distance covered}}{\text{Total time taken}}$
- An object moving along a straight line path is said to have uniform motion if its speed remains constant. On the other hand, it is said to have non-uniform motion if its speed keeps changing.
- For measuring the time, our ancestors used sundials, water clocks and sand clocks.

  The clocks used today make use of some periodic motion. One of the most well-known periodic motions is the motion of simple pendulum.
- The pendulum is said to have completed one oscillation when its bob moves from one extreme position (A) to the other extreme position (B) and comes back to (A) (fig. - B)
- The time taken by the pendulum to complete one oscillation is called its time period.

- Periodic events are used for the measurement of time. Periodic motion of a pendulum has been used to make clocks and watches.
- A simple pendulum consists of a small metallic ball called bob, suspended from a rigid stand by a thread. (fig. - A).

(fig. - A)
(A simple pendulum)

- The position of the bob is minimum at 'O' when the thread of simple pendulum is vertical. It is called mean position of the pendulum. (fig. - B).




(fig. - B)

(Different position of the bob of an oscillating simple pendulum)

- When the bob of the pendulum is released after taking it slightly to one side, it begins to move to and fro. The to and fro motion of a simple pendulum is an example of a periodic or an oscillatory motion.
- Nowadays most clocks or watches have an electric circuit with one or more cells. These clocks are called quartz clocks. The time measured by quartz clocks is much more accurate than that by the clocks available earlier.
- The basic unit of time is 'second'. Its symbol is 's'.
- The basic unit of speed is m/s. It could also be expressed in other units such as m/min or Km/h.
- The time taken in saying aloud "two thousand and one" is nearly one second.
- Speedometer is a device to record speed directly in Km/h.
- Odometer is a device to measure the distance moved by the vehicle.
- We can represent the data in pictorial form by three ways: (i) Bar graph, (ii) Pie chart, (iii) Line graph.
- Motion of an object can be represented in pictorial form by their distance - time graph.
- The distance-time graph for the motion of an object moving with a constant speed is a straight line.
  However if the speed of the object keeps changing the graph can be of any other shape.

# Motion and Measurement

## Work Sheet -1

1. Choose the correct option in the following : (1 mark each)

(i) Motion of a car on a straight line with constant speed is -

(a) non-uniform motion (b) uniform motion

(c) Both (a) and (b) (d) None of these

(ii) A car travels 54 Km in 90 minutes. The speed of the car is -

(a) 0.6 m/s (b) 10 m/s

(c) 5.4 m/s (d) 3.6 m/s

(iii) Nearly all the clocks make use of -

(a) straightline motion (b) periodic motion

(c) random motion (d) circular motion

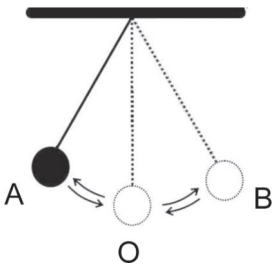
(iv) Observe the figure. The time period of a simple pendulum is the time taken by it to travel from -

(a) A to B and back to A

(b) O to A, A to B and B to A

c) B to A, A to B and B to O

d) A to B




(v) Which of the following options is not a standard unit ?

(a) Hand span (b) Metre

(c) Second (d) Gram

(vi) The unit Km/h is used to measure-

(a) uniform speed (b) uniform acceleration

(c) speed per unit time (d) distance

(vii) If we denote speed by S, distance by D and time by T, then the relationship between these quantities is -

(a) $S = \frac{D}{T}$ (b) $S \times D = T$ (c) $D \times T = S$ (d) None of these

(viii) By Sundial, one can measure -

(a) speed (b) distance (c) time (d) height

(ix) Which one of the following is smallest unit of time ?

(a) Second (b) Millenniums (c) Nanosecond (d) Microsecond

(x) Time period of a simple pendulum depends on -

(a) length of the string (b) mass of the bob

(c) Both (a) and (b) (d) None of these

(xi) Which one of the following options is not the unit of speed ?

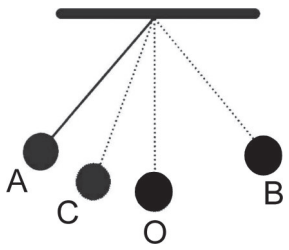
(a) Metre/second (b) Second/ metre

(c) Km/h (d) Km/minute

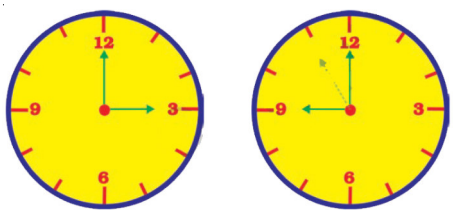
(xii) Time taken by the bob to move from A to C is $t_1$ and from C to O is $t_2$ as shown in the figure. The time period of this simple pendulum is -

(a) $(t_1+t_2)$ (b) $3\ (t_1+t_2)$

(c) $2\ (t_1+t_2)$ (d) $4\ (t_1+t_2)$




(xiii) Two clocks A and B are shown in the figures. Clock A has an hour and a minute hand whereas clock B has an hour hand, minute hand as well as a second hand. Which of the following statement is correct for these clocks?




(a) A time interval of 30 second can be measured by clock A.

(b) A time interval of 30 second cannot be measured by clock B.

(c) Time interval of 5 minute can be measured by both A and B.

(d) Time interval of 4 minute 10 second can be measured by clock A.

2. Fill in the blanks : (1 mark each)

(i) We can differentiate between the motion of two bodies by knowing their _____.

(ii) Speed of a body is more if it covers a fixed _____ in less time interval.

(iii) Average speed of an object is the ratio of total _____ covered to the total _____ taken by it.

(iv) The motion of simple pendulum is _____.

(v) Time between one sunrise and the next sunrise is called a _____.

(vi) The time measured by _____ clock is much more accurate than other clocks.

(vii) The time taken by the pendulum to complete one oscillation is called its _____.

(viii) A _____ is one millionth of a second.

3. Write 'T' for true or 'F' for false for the following statements : (1 mark each)

(i) Faster vehicle has a higher speed. ☐

(ii) All the clocks make use of some periodic motion. ☐

(iii) Time is the product of speed and distance. ☐

(iv) The symbols of all units must be written in singular. ☐

(v) Times of historical events are stated in terms of year. ☐

(vi) Distance covered by a vehicle is measured by odometer. ☐

(vii) Distance covered by a moving car is measured by speedometer. ☐

(viii) It is advantageous to measure the age of a person in hours. ☐

4. Match the statement in column I with the statement suitable in column II : (1 mark each)

| Column I | Column II |
|---|---|
| (a) Time required to complete one oscillation | (i) Second |
| (b) Clocks with electric circuit | (ii) Sand clock |
| (c) Basic unit of time | (iii) 180 minute |
| (d) A timing device which uses falling sand | (iv) Time period |
| (e) Three hours is equals to | (v) Quartz clock |

5. Define the following terms : (2 marks each)
   (i) Speed: Speed is the distance covered by an object in unit time.
   (ii) Uniform Motion: _____
   _____
   (iii) Time period: _____
   _____
   (iv) Periodic motion : _____
   _____

6. Differentiate between the following : (2 marks each)
   (i) Uniform and Non-uniform motion: _____
   _____
   _____
   (ii) Speed and Time: _____
   _____
   _____
   (iii) Circular motion and Rectilinear motion : _____
   _____
   _____

7. Very short answer type questions : (1 mark each)
   (i) Arrange in descending order: Second, hour, nanosecond, minute.
   _____
   (ii) Write one use of speedometer in the vehicles.
   _____
   (iii) What is the basic unit of time ?
   _____
   (iv) In which unit, the speed of launching setellites into earth's orbit is measured?
   _____

8. Short answer type questions : (2 marks each)
   (i) When a pendulum is said to have completed one oscillation ? What is the time taken to complete one oscillation?
   _____
   _____

(ii) What are the units of time that we use in our everyday life ?

_____

_____

(iii) Ayan and Anik have to cover different distances to reach their school but they take the same time to reach the school. What can you say about their speed ?

_____

_____

(iv) If Ayan covers a certain distance in one hour and Anik covers the same distance in two hours. Who travels with a higher speed ?

_____

_____

(v) How can we determine the motion made by anybody to be uniform or non-uniform ?

_____

_____

(vi) Rajdhani Express takes 3 hours to reach Dharmanagar from Agartala at a speed of 60 Km/h. Find the distance it travels.

_____

_____

(vii) A spaceship travels 36000 Km in 1 hour. Express its speed in Km/s.

_____

_____

9. Long answer type question : (3/4 marks)

(i) Explain the different positions of a simple pendulum while it oscillates with the help of diagram.

_____

_____

_____

_____

_____

# Distance - Time Graph

## Work Sheet -2

1. Choose the correct option in the following : (1 mark each)

(i) Distance - Time graph is a -

(a) Bar graph (b) Pie chart (c) Line graph (d) None of these.

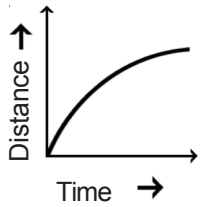
(ii) Which of the following distance-time graphs show a truck moving with uniform speed ?

(a)


(b)


(c)


(d)



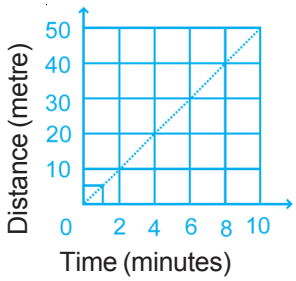

(iii) Two students were asked to plot a distance-time graph for the motion described by Table A and Table B.

Table - A

| Distance moved (m) | 0 | 10 | 20 | 30 | 40 | 50 |
|---|---|---|---|---|---|---|
| Time (minutes) | 0 | 2 | 4 | 6 | 8 | 10 |

Table - B

| Distance moved (m) | 0 | 5 | 10 | 15 | 20 | 25 |
|---|---|---|---|---|---|---|
| Time (minutes) | 0 | 1 | 2 | 3 | 4 | 5 |

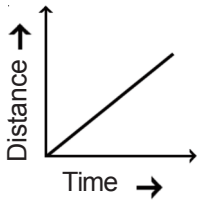



The graph given in the figure is true for -

(a) Both A and B (b) Only A

(c) Only B (d) Neither A nor B.

(iv) Which of the following distance-time graph is correct for a body at rest ?

(a) 


(b) 


(c) 


(d) 


2. Fill in the blanks : (1 mark each)

(i) The composition of air in our atmosphere can graphically be represented by _____.

(ii) The plot of distance-time graph for uniform motion is _____.

(iii) The point of intersection of X axis and Y axis of a line graph is called _____.

3. Write 'T' for true or 'F' for false for the following statements : (1 mark each)

(i) A pie chart or a bar graph cannot represent the uniform motion of a body.

(ii) The distance-time graph of a car moving with non-uniform speed is a curved line.

4. Define the following terms : (2 marks each)

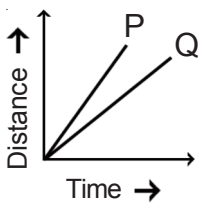
(i) X - axis: The horizontal line of a line graph is marked as XOX/. It is known as X- axis.

(ii) Y - axis: _____

_____.

5. Very short answer type questions : (1 mark each)

(i) The given figure shows the distance-time graph of two moving bodies.




Which one of them is moving faster ?

(ii) What will be the nature of distance-time graph for a

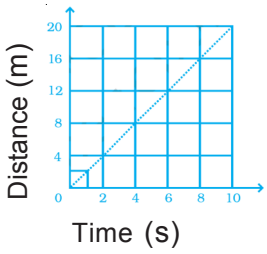
car standing on the side of a road ?

_____

6. Short answer type questions : (2 marks each)

(i) Complete the data of the table given below with the help of the distance-time graph given in the figure.

| Distance (m) | 0 | 4 | ? | 12 | ? | 20 |
|---|---|---|---|---|---|---|
| Time (s) | 0 | 2 | 4 | ? | 8 | 10 |




(ii) Write two steps for drawing the graph.

_____

_____

7. Long answer type questions : (3/4 marks each)

(i) Plot a distance-time graph of the tip of the second hand of a clock by selecting 4 points on X axis and Y axis, respectively. The circumference of the circle traced by the second hand is 64 Cm.

_____

_____

_____

(ii) Write three points to be kept in mind while choosing the most suitable scale for drawing a graph.

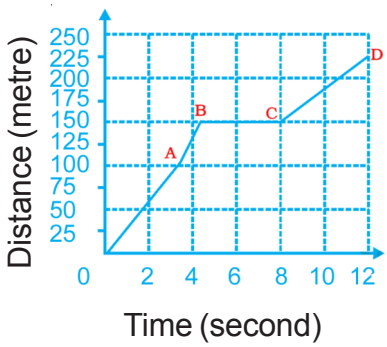
_____

_____

_____

(iii) Anik goes to the football ground to play football. The distance-time graph of his journey from his home to the ground is given in the figure.

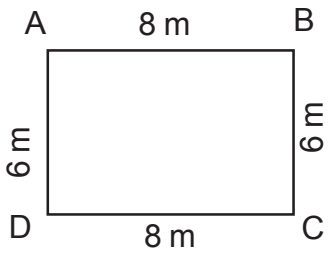
(a) What does the graph between point B and C indicates about the motion of Anik ?



(b) Whether the motion is uniform or non-uniform between the time interval of 0 to 4 minute ?

(c) What is the speed between time interval of 8 minutes to 12 minutes?

(iv) Starting from A, Susmita moves along a rectangular path ABCD as shown in the figure. She takes 2 minutes to travel each side.




Plot a distance-time graph and explain whether the motion is uniform or non-uniform ?

**Answer**

**Chapter 13 Motion and Time**

**Work Sheet - 1**

1. (i) (b) (ii) (b) (iii) (b) (iv) (a) (v) (a) (vi) (a) (vii) (a) (viii) (c). (ix) (c) (x) (a) (xi) (b) (xii) (d) (xiii) (c)

2. (i) speed (ii) distance (iii) distance, time (iv) periodic
   (v) day (vi) quartz (vii) time period (viii) microsecond
3. (i) T (ii) T (iii) F (iv) T (v) F (vi) T. (vii) F (viii) F
4. (a) - (iv) (b) - (v) (c) - (i) (d) - (ii) (e) - (iii)
7. (i) Hour 〉 minute 〉 second 〉 nanosecond
   (ii) To measure the speed of the vehicles
   (iii) Second (iv) Kilometre/ second

**Work Sheet - 2**

1. (i) (c) (ii) (a) (iii) (a) (iv) (c)
2. (i) Pie chart (ii) Straight line (iii) Origin
3. (i) T (ii) T
5. (i) The body P (ii) Straight line parallel to time axis

## Chapter - 14

# Electric Current and its Effects

**Synopsis of the chapter:**

- It is convenient to represent electric components by symbols. Using these, an electric circuit can be represented by a circuit diagram.
- Battery is a combination of more than one cells.
- When the switch is in the 'ON' position, the circuit from the positive terminal of the battery to the negative terminal is complete. The circuit is then said to be closed and the current flows throughout the circuit instantly.
- When the switch is in the 'OFF' position, the circuit is incomplete. It is said to be open. No current flows through any part of the circuit.
- In the bulb there is a thin wire, called the filament, which glows when an electric current passes through it. When the bulb gets fused, its filament is broken.
- When an electric current flows through a wire, the wire gets heated. It is the heating effect of current. This effect has many applications.
- The coil of high resistance wire present in an electric heating appliance is called element.

- The amount of heat produced in a current carrying wire depends on its material, length and thickness.
- Wires made from some special materials melt quickly and break when large electric current are passed through them. These materials are used for making electric fuses which prevent fire and damage to electric appliances.
- MCBs(Miniature Circuit Breakers) are switches which automatically turn off when current in a circuit exceeds the safe limit.
- ISI marked electrical appliance is safe and energy efficient.
- When electric current passes through a wire, a magnetic field is produced around the wire.
- A current carrying coil of an insulated wire wrapped around a piece of iron is called an electromagnet.
- When an electric current flows through this wire, it behaves like a magnet. This is the magnetic effect of the electric current.
- Electromagnet is used in electric bell.

# Electric Circuit and its Components

## Work Sheet -1

1. Choose the correct option in the following: (1 mark each)

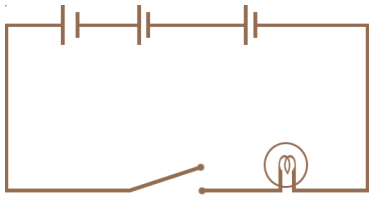
   (i) A device used to open and close electric circuit is -

   (a) wire (b) fuse (c) switch (d) resistance

   (ii) Which of the following is not a circuit element ?

   (a) Voltmeter (b) Resistor (c) Battery (d) Potential difference

   (iii) Which of the following statement is true regarding the given circuit diagram?

   (a) It is a complete circuit.

   (b)The bulb will not glow.

   (c) The wire is broken.

   (d) Electric current flows wrong way.

   (iv) There is a longer line and a shorter but thicker parallel line in the symbol of an electric component is -

   (a) electric bulb (b) electric cell (c) battery (d) electric wire

2. Fill in the blanks : (1 mark each)

   (i) An electric cell has _____ and negative terminals.

   (ii) The batteries used in tractors, trucks and inverters are made up of _____.

   (iii) In the bulb there is a thin wire called _____.

   (iv) If the filament of the bulb is broken, the bulb will not _____.

(v) If the filament of the bulb is broken, the electric circuit is _____.

(vi) The _____ is used to connect the various electrical components in a circuit.

3. Write 'T' for true or 'F' for false for the following statements : (1 mark each)

(i) A longer line of electric cell represents positive terminal. ☐

(ii) It is not good to represent electric components by its symbols. ☐

(iii) In the battery compartment, (+) and (-) symbols are printed. ☐

(iv) To make a battery, the negative terminal of a cell is connected with positive terminal of other cell. ☐

(v) Batttery is used in torches, transistors, TV remotes. ☐

(vi) A connecting wire in the electric circuit is represented by zig-zag line. ☐

4. Match the words given in column I with the suitable symbols given in column II (1 mark each)

| Column I | Column II |
|---|---|
| (a) Electric cell | (i)  |
| (b) Electric bulb | (ii)  |
| (c) Switch 'ON' position | (iii)  |
| (d) Switch 'OFF' position | (iv)  |
| (e) Battery | (v)  |
| (f) Wire | (vi)  |

5. Define the following terms : (2 marks each)

(i) Cell holder: It is a box which is used to hold electric cells to make battery.

(ii) Battery:

_____

_____

_____

6. Differentiate between the following : (2 marks each)

   (i) Electric cell and battery :

   _____

   _____

   _____

   (ii) Open circuit and closed circuit :

   _____

   _____

   _____

7. Very short answer type questions : (1 mark each)

   (i) Why an electric bulb glows when an electric current is switched 'ON' ?

   Answer: When an electric current is switched 'ON', electric current flows through the filament of the bulb. This is why bulb glows.

   (ii) Bibek made an electric circuit using two cells in a cell holder, a switch and a bulb. When he put the switch in the 'ON' position, the bulb did not glow. Identify the possible defect in the circuit.

   _____

   _____

8. Short answer type questions : (2 marks each)

   (i) Why should not we touch a lighted electric bulb ?

   _____

   _____

   (ii) "Don't experiment with the electric supply from mains." Justify the given statement.

   _____

   _____

(iii) What are symbols of positive and negative terminals of an electric cell ?

_____

_____

(iv) Whether the electric circuit will be complete or not if the filament of the bulb is broken ? Will the bulb glow ?

_____

_____

9. Long answer type questions : (3/4 marks each)

(i) What do you mean by close circuit ?

Draw a closed electric circuit diagram containing each component of electrical circuit and point out them.

_____

_____

_____

(ii) What do you mean by open circuit ?

Draw an open circuit and point out each components.

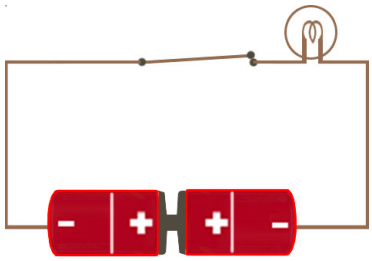
_____

_____

_____

(iii) Bulb did not glow in the given circuit. Where is the fault ?

Make necessary change in the circuit to make the bulb glow.



# Effects of Electric Current

## Work Sheet -2

1. Choose the correct option in the following : (1 mark each)

(i) When an electric current flows through the filament of a bulb, it produces-

A. Light B. Sound C. Heat D. Aluminium

(a) A and B (b) A and C (c) B and D (d) D

(ii) 'During the time of short circuit, the current in the circuit -

(a) does not change (b) reduces (c) varies (d) increases rapidly

(iii) Automatic switch used in household in place of fuse wire is -

(a) CBD (b) DCB (c) MCD (d) MCB

(iv) A lot of electric energy wasted in a filament type bulb in the form of -

(a) Light (b) Heat (c) Magnetism (d) Sound

(v) The magnetic effect of electric current was discovered by -

(a) Darwin (b) Maxwell (c) Oersted (d) Newton

(vi) When a magnetic compass is brought near a current carrying wire -

(a) magnetic needle is deflected (b) it loses its magnetism

(c) no effect on the magnetic needle (d) None of these

(vii) The ISI mark on an electric appliance ensures that the appliance is -

(a) popular (b) durable (c) safe and wastage of energy is minimum

(d) fire proof

(viii) Which of the following appliance is not based on the principle of heating effect of current ?

(a) electric bulb (b) electric kettle (c) room heater (d) electric bell

2. Fill in the blanks : (1 mark each)

   (i) A coil of wire present in room heater or in electric heater is called _____.

   (ii) The amount of heat produced in a wire _____ with time. (increase/ decrease)

   (iii) The _____ reduces the wastage of electric current and can be fixed in the ordinary bulb holder.

   (iv) When large electric currents are passed through a fuse, it _____.

   (v) Electric current can be used to make _____.

3. Write 'T' for true or 'F' for false for the following statements : (1 mark each)

   (i) The coiled wire in an electrical heating device called filament. ☐

   (ii) The electric fuse is a wire which prevents short circuit. ☐

   (iii) If the current through the fuse exceeds safe limit, it melts quickly and breaks. ☐

   (iv) An electromagnet does not attract iron pieces. ☐

   (v) Electromagnet is present in an electric bell. ☐

4. Match the statements given in column I with the suitable in column II (1 mark each)

| Column - I | Column - II |
|---|---|
| (a) A material used to make an electromagnet | (i) Short circuit |
| (b) Coiled wire of an electric heater | (ii) Christian Oersted |
| (c) Excess current in electric circuit cause damage of device | (iii) Handle of crane |
| (d) Magnetic effect of current is discovered by | (iv) Ammeter |
| (e) A device used to find direction | (v) Element |
| (f) Electromagnet is used in | (vi) Soft iron |
| (g) An instrument used to measure current | (vii) Magnetic compass |

5. Define the following terms : (2 marks each)

   (i) Electric fuse: _____

   _____

   (ii) Electromagnet: _____

   _____

6. Give reasons for the following : (2 marks each)

(i) The magnetic needle moves when electric current is passed through nearby wire:

_____

_____

_____

(ii) CFL should be used in place of bulb:

_____

_____

_____

7. Very short answer type questions : (1 mark each)

(i) Give the full form of MCBs.

_____

(ii) Give the full form of ISI.

_____

(iii) Name the device which is used in place of electric fuses.

_____

(iv) What is the magnet called whose magnetism can be turned 'ON' or 'OFF'?

_____

(v) Which effect of electric current is used -

(a) In an electric bell ?

_____

(b) In an electric iron ?

_____

8. Short answer type question : (2 marks each)

(i) Write the difference between heating effect of current and magnetic effect of current.

_____

_____

(ii) Give the dependence of amount of heat produced in a wire when electric current is passed through it.

_____

(iii) Give two characteristics of a fuse wire.

(iv) Briefly explain how does fuse wire protect an electric circuit.

(v) Why any metal wire or sheet should not be used in place of fuse wire ?

(vi) Give two uses of electromagnet.

9. Long answer type question : (3/4 marks)

(i) Explain with the help of a diagram, how does the magnetic effect of current help in the working of electric bell.

**Answers**

**Electric Current and its Effect**

**Work Sheet - 1**

1. (i) (c) (ii) (d) (iii) (d) (iv) (b)
2. (i) positive (ii) electric cells (iii) filament (iv) glow (v) open (vi) wire
3. (i) T (ii) F (iii) T (iv) T (v) T (vi) F
4. (a) - (v) (b) - (vi) (c) - (iv) (d) - (i) (e) - (iii) (f) - (ii)

**Work Sheet - 2**

1. (i) (b) (ii) (d) (iii) (d) (iv) (b). (v) (c) (vi) (a) (vii) (c) (viii) (d)
2. (i) element (ii) increase (iii) CFL (iv) melts (v) magnet
3. (i) F (ii) T (iii) T (iv) F (v) T
4. (a) - (vi) (b) - (v) (c) - (i) (d) - (ii) (e) - (vii) (f) - (iii) (g) - (iv)

# Chapter - 15

# LIGHT

**Synopsis of the chapter :**

- Light travels along straight lines.
- Any polished or shining surface acts as a mirror.
- The change of direction of incident light by a surface that falls on it is called reflection of light.
- Objects are visible only when reflected light reaches our eyes.
- An image formed by a plane mirror is erect and of the same size as the object.
- In a plane mirror, the image is at the same distance from a mirror as the object is in front of it.
- Sides are changed in the image formed by plane mirror.
- Common example of a curved mirror is a spherical mirror.
- Spherical mirrors whose inner side is reflecting are called concave mirror and spherical mirrors whose outer side is reflecting are called convex mirror.
- Spherical mirror is a part of sphere.
- The inner surface of a spoon acts like a concave mirror, while its outer surface acts like a convex mirror.

- An image formed on a screen is called real image while an image could not be obtained on a screen is called virtual image.
- The image formed by a concave mirror can be smaller or larger in size than the object, the image may also be real or virtual.
- The image formed by a convex mirror is always virtual, erect and smaller in size than the object.
- Convex mirrors can form images of objects spread over a large area. So, these help the drivers to see the traffic behind them.
- The magnifying glass is actually a convex lens.
- A convex lens converges the light falling on it, so it called a converging lens. On the other hand, a concave lens diverges the light and is called a diverging lens.
- A concave lens always forms erect, virtual and smaller image than the object.
- Rainbow appears usually after the rain when the sun is low in the sky.
- There are seven colours in a rainbow. These are red, orange, yellow, green, blue, indigo and violet.
- Rainbow is seen when the back of observer is towards the sun.
- Sunlight is white and it consists of seven colours.

# Reflection of Light

## Work Sheet -1

1. Choose the correct option in the following statements : (1 mark each)

(i) If we look at our image in a plane mirror, we see -

(a) our right hand is on the right side of the mirror.

(b) our image is upside down.

(c) our left hand is on the left hand side

(d) our right hand is on the left side of the mirror.

(ii) In the case of reflection -

(a) virtual image is on the same side as the object.

(b) real image is on the other side of the reflector.

(c) both virtual and real images are on the same side as the object.

(d) none of the above.

(iii) The image of the teeth seen by a dentist while testing teeth is -

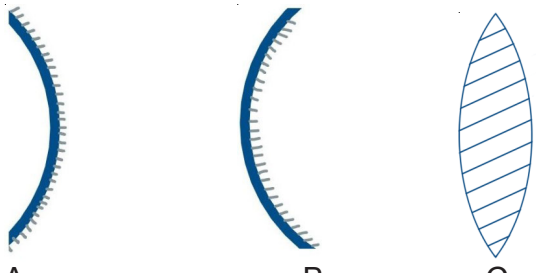
(a) erect and real

(b) erect and virtual

(c) inverted and virtual

(d) inverted and real.

(iv) Which of the following is a concave mirror ?




(a) A (b) C (c) B (d) Both A and B.

(v) You are provided with a concave mirror, a convex mirror, a concave lens and a convex lens. To obtain an enlarged image of an object, you can use either -

(a) concave mirror or convex mirror (b) concave mirror or convex lens

(c) concave mirror or concave lens (d) concave lens or convex lens

(vi) If the image formed is always virtual, the mirror can be -

(a) concave or convex (b) concave or plane

(c) convex or plane (d) only convex

2. Fill in the blanks : (1 mark each)

(i) Light is a form of _____.

(ii) Any polished or a shining surface acts as a _____.

(iii) The image formed by _____ mirror is erect, virtual and of same size as that of object.

(iv) _____ image can be obtained on the screen.

(v) The inner surface of a steel spoon acts like a _____ mirror.

(vi) The inner surface of the reflector used in torch acts like a _____ mirror.

(vii) The mirror fitted beside of the driver is _____.

3. Write 'T' for true or 'F' for false for the following statements : (1 mark each)

(i) Light rays always travel in straight line. ☐

(ii) A real image can't be taken on screen. ☐

(iii) A virtual image is always erect. ☐

(iv) A convex mirror is also known as diverging mirror. ☐

(v) The outer surface of a steel spoon acts as concave mirror. ☐

(vi) The image formed by a concave mirror is always behind the mirror. ☐

4. Match the statements given in column I with the suitable given in column II (1 mark each)

| Column - I | Column - II |
|---|---|
| (a) Image smaller than object | (i) Rectilinear |
| (b) Propagation of light in straight line | (ii) Converging mirror |
| (c) A concave mirror is called | (iii) Concave |
| (d) Mirror used in the headlights | (iv) Plane mirror |
| (e) Distance of object and image from the mirror is equal | (v) Diminished image |

5. Define the following : (2 marks each)

   (i) Reflection of light: _____

   _____

6. Give reasons for the following : (2 marks each)

   (i) Dentist uses concave mirror to investigate tooth.

   Ans. A concave mirror forms virtual, erect and magnified image of an object placed very close to it which helps a dentist to examine the tooth inside the mouth very easily.

   (ii) Torches and car's headlights have concave mirror.

   _____

   _____

7. Differentiate between the following : (2 marks each)

   (i) Concave mirror & convex mirror.

   _____

   _____

   (ii) Real image & virtual image.

   _____

   _____

8. Very Short Answer Type Question : (1 mark each)

(i) Which phenomena of light is involved in the formation of image by convex mirror?

_____

(ii) Name any two letters of English alphabet in which image formed in a plane mirror appears exactly same.

_____

(iii) If the distance between the object and the plane mirror is 5 cm, then what will be the distance between the object and its image?

_____

9. Short Answer Type Question : (2 marks each)

(i) What is the reason of using convex mirror as a rearview mirror of a car?
Ans. Convex mirror can form virtual, erect and smaller Images of objects spread over a large area. That is the reason of using a convex lens as a rearview mirror of a car.

(ii) You are given three mirrors of different types, how will you identify the type of each of them?

_____

_____

(iii) The side mirror of a scooter got broken. The mechanic replaced it with a plane mirror. Mention any inconvenience that the driver of the scooter will face while using it ?

_____

_____

10. Long Answer Type Question : (3/4 times)

(i) Write the properties of image formed in a plane mirror.

_____

_____

_____

_____

# Refraction of Light

## Work Sheet -2

1. Choose the correct option : (1 mark each)

   (i) Rainbow is seen in the sky when –

   (a) Sun is in front of you
   (b) Sun is in the back side of you
   (c) Sun is just above the head
   (d) Sun rises

   (ii) An image formed by a lens is erect. Such an image could be formed by a –

   (a) Convex lens provided the image is smaller than object.
   (b) Concave lens provided the image is smaller than object.
   (c) Concave lens provided the image is larger than object.
   (d) Concave lens provided the image is of the same size.

   (iii) An image larger than the object is produced by -

   (a) Concave lens
   (b) Convex lens
   (c) Convex mirror
   (d) Plane mirror.

2. Fill in the blanks : (1 mark each)

   (i) A magnifying glass is _____ lens.

(ii) When a disc painted with the seven colours of rainbow is rotated rapidly, it appears to be _____.

(iii) The image formed by concave lens is always _____ than the object.

3. Write 'T' for true and 'F' for false for the following statements : (1 mark each)

(i) A white light consists of eight colors. ☐

(ii) A white light passing through a lens splits into different colors. ☐

(iii) It is good to look through a lens at the sun. ☐

(iv) A concave lens generally converges all light rays. ☐

4. Match the words given in column I with the suitable in column II. (1 mark each)

| Column - I | Column - II |
|---|---|
| (a) Convex lens | (i) Image formed by concave lens |
| (b) White light | (ii) Object at very large distance |
| (c) Virtual image | (iii) Mixture of seven colours |
| (d) Point size image | (iv) Can form both real and virtual images |

5. Define : (2 marks each)

(i) Rainbow : _____

_____

6. Differentiate between the following : (2 marks each)

(i) Concave lens and convex lens: _____

_____

(ii) Mirror and lens: _____

_____

7. Very short answer type questions : (1 mark each)

   (i) Name the lens which can converge sun's rays to a point and burn a piece of paper.

   _____

   (ii) The image formed by a lens is always virtual, erect and smaller in size for an object kept at different positions in front of it. Identify the nature of the lens.

   _____

8. Short Answer Type Questions : (2 marks each)

   (i) Give two important uses of convex lens.

   _____

   _____

   (ii) Compare the image formed in case of concave and convex lens.

   _____

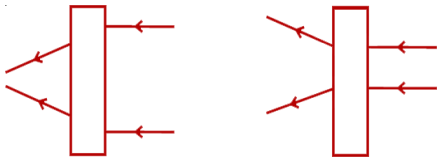
   _____

   (iii) Observe the figures carefully. The given figures show the path of light through lenses of two different types, represented by rectangular boxes A and B. What is the nature of lenses A and B?

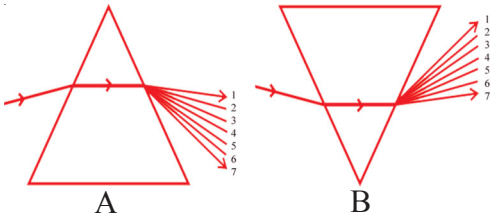
   _____

   _____

   _____




   (iv) State the correct sequence (1-7) of colours in the spectrum formed by the prisms A and B as shown in the figure.



9. Long Answer Type : Marks - 3/4

(i) Why convex lens is called converging lens and concave lens is called diverging lens?

_____

_____

_____

_____

**Answers**

**Work Sheet-1**

1) (i) (d), (ii) (d), (iii) (b), (iv) (a), (v) (b), (vi) (c)

2) (i) energy (ii) mirror (iii) plane (iv) Real (v) concave (vi) concave (vii) convex

3) (i) T (ii) F (iii) T (iv) T (v) F (vi) F

4) (a)-(v), (b)-(i), (c)-(ii), (d)-(iii), (e)-(iv)

8) (i) Reflection (ii) A,H (iii) 10cm

**Work Sheet-2**

1) (i) (b), (ii) (b), (iii) (b)

2) (i) convex (ii) white (iii) smaller

3) (i) F, (ii) F, (iii) F, (iv) F

4) (a)-(iv), (b)-(iii), (c)-(i), (d)-(ii)

7) (i) Convex lens (ii) Concave lens

## Chapter - 16

# Water : A Precious Resource

## Work Sheet-1

**Key points :**

- Water is essential for all living beings.
- 22nd March is celebrated as the world water day.
- About 71% of the earth's surface is covered with water.
- Water exists in three forms: solid, liquid and vapour.
- Though water is maintained by the water cycle, yet there is an acute scarcity of water in many parts of the globe.
- Under ground water is a good source of water.
- We would reach a level where all the space between particles of soil and gaps between rocks are filled with water. The upper level of this layer is called the water table.
- The process of seeping of water into the ground is called infiltration. The groundwater thus gets recharged by this process.
- Depletion of water table happens due to many reasons. Increase in population, industrial and agricultural activities are some common factors

affecting water table. Scanty rainfall is another factor that may deplete the water table.

- There is an uneven distribution of water.
- The rainwater can be used to recharge the groundwater. This is referred to as rain water harvesting.
- Water is very important for plants nutrition and growth.
- The need of the hour is that every individual uses water economically.

## Questions

**1. Tick the correct answer : (1 mark each)**

(i) World water day is-

(a) 5th June (b) 22nd December (c) 22nd March (d) 21st July

(ii) Percentage of water on the Earth surface is-

(a) 0.006% (b) 71% (c) 31% (d) 69%

(iii) International Year of Freshwater was-

(a) 2003 (b) 2007 (c) 2019 (d) 2011

(iv) Which of the following is not connected with water cycle?

(a) Layer (b) Water absorption (c) Humidity (d) Humus

(v) The process of seeping of water into the ground is called–

(a) infiltration (b) water table (c) aquifer (d) water cycle

(vi) A technique of watering plants by making use of narrow tubings is called

(a) Water harvesting (b) infiltration

(c) drip irrigation (d) none of these

2. Fill in tha blanks : (1 mark each)

(i) Water vapour is _____ form of water.

(ii) The process in which the water quantity of the Earth remains same is _____ .

(iii) The _____ in the soil indicates the presence of water underground.

(iv) The water found below the water table is called _____ .

3. Mention True/ False : (1 mark each)

   (i) Snow and ice are the solid state of water.

   (ii) The water that is fit for use is freshwater.

   (iii) Ground water is stored between layers of hard rock below the water table.

   (iv) Deforestation does not affect water table.

   (v) Water on the Earth is same every where.

4. Answer in one/ two words : (1 mark each)

   (i) What is the actual amount of water available for human use?

   (ii) What is the upper level of this layer (water filled between soil particles and gaps of rocks) called?

   (iii) Name the process in which the rainwater can be used to recharge the groundwater.

5. Answer the following questions : (2 marks each)

   (i) Define water cycle.

   (ii) What are infiltration and aquifer?

   (iii) What is rain water harvesting?

   (iv) Write 3 causes for depletion of water table.

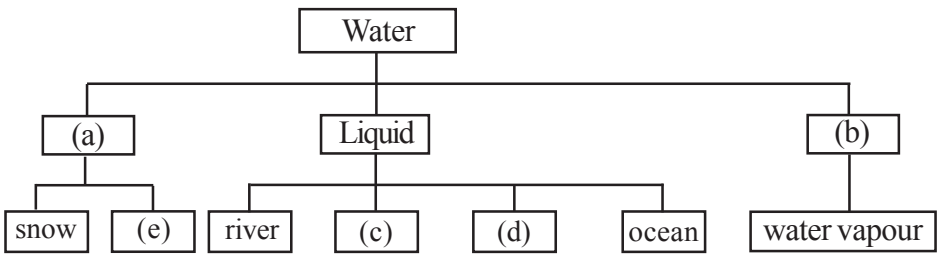
6. Answer the following questions : (3/4 marks each)

   (i) Explain how water table can go down as a result of population growth.

   (ii) What measures can be taken to prevent water wastage?

   (iii) Write the effect of water crisis on plants.

7. Complete the table by suitable word/ words. (Marks-4/5)



## Answers

**Work sheet-1**

1. (i) (c) (ii) (b) (iii) (a) (iv) (d) (v) (a) (vi) (c).
2. (i) vapour (ii) water cycle (iii) moist (iv) underground water.
3. (i) True (ii) True (iii) True (iv) False (v) False.
4. (i) 0.006% (ii) water table (iii) rain water harvesting
5. (ii) The process of seeping of water into the ground is called infiltration. At places the ground water is stored between layers of hard rock below the water table. This is known as an aquifer.
7. (a) solid (b) gaseous (c) well (d) lake (e) ice

# Chapter - 17

# Forests: Our Lifeline

## Work Sheet-1

**Key points-**

- We get various products from the forests surrounding us.
- The forest floor and the trees were also covered with different types of creepers and climbers.
- Wooden items are like plywood, fuel wood, boxes, paper, matchsticks, and furniture. Gum, oils, spices, fodder for animals and medicinal plants are also some of the products which we get from the forests.
- Branchy part of a tree above the stem is known as the crown of the tree.
- All animals, whether herbivores or carnivores, depend ultimately on plants for food. Organisms which feed on plants often get eaten by other organisms, and so on. This is said to form a food chain. For example-

  **Grass → insects → frog → snake → eagle**

- The micro-organisms which convert the dead plants and animals to humus are known as decomposers. These micro-organisms play an important role in the forest. Example- Bacteria, fungus, etc.

- Forest is known as Green Lungs. Forest maintains the amount of oxygen and carbon dioxide in air.
- Forests protect soil and provide habitat to a large number of animals. Forests help in bringing good rainfall in neighbouring areas
- If forests disappear, the amount of carbon dioxide in air will increase, resulting in the increase of earth's temperature.
- We must preserve our forests.

## Questions

1. Tick the correct answer : (1 mark each)

(i) Spectacle Monkey is found in-

(a) Gomati (b) Kaziranga (c) Trishna (d) Sepahijala

(ii) Which of the following is not obtabined form forests?

(a) honey (b) gum (c) resin (d) petroleum

(iii) Branchy part of a tree above the stem is known as-

(a) crown (b) canopy (c) understoreys (d) humus

(iv) Green Lung is-

(a) trees (b) water land (c) forests (d) garden

(v) Green plants release during photosynthesis-

(a) carbon dioxide (b) water vapour

(c) nitrogen (d) oxygen

(vi) Which of the following is not a tree-

(a) sal (b) teak (c) palash (d) resin

2. Fill in the blanks : (1 mark each)

(i) Medicinal plants are also some of the products which we get from the _____.

(ii) The micro-organisms which convert the dead plants and animals to humus are known as _____.

(iii) Habitat of wild animal is _____.

(iv) Giant and tall trees constitute the _____.

3. Mention True/ False : (1 mark each)

(i) Different layers of vegetation provide food and shelter for animals.

(ii) Gum is not found from forests.

(iii) Eagle eats snake.

(iv) Forests have no impact on water cycle.

(v) The Rohini tree climbs up to another tree.

4. Answer in one/ two words : (1 mark each)

(i) The branches of the tall trees look like a roof over the other plants in the forest. What is it known as?

(ii) Name one medicinal plant.

(iii) If there is no forest, the amount of which gas will increase?

(iv) What types of trees form canopy?

5. Answer the following questions : (2 marks each)

(i) Name four products obtained from forests.

(ii) Sutapa wrote a food chain in the following way :

frog → eagle → insects → grass → snake

The chain is not in the correct order. Help her to write the food chain correctly.

(iii) Write the names of four birds found in the forests of Tripura.

6. Answer the following questions : (3/4 marks each)

(i) What are decomposers? Write their role.

(ii) Explain with the help of diagrams how the balance of carbon dioxide and oxygen in the air is maintained.

7. Match the Column :

| Column- I | Column-II |
|---|---|
| (a) Canopy | (i) Microorganisms |
| (b) Forest | (ii) Dead plant and animal tissues |
| (c) Humus | (iii) Branches of tall trees |
| (d) Decomposer | (iv) Habitat for wild life |

8. Forest is our life line. Explain with five sentences.

_____

_____

_____

_____

_____

_____

_____

**Answers**

**Worksheet-1**

1. (i) a (ii) (d) (iii) (a) (iv) (c) (v) (d) (vi) (d)

2. (i) forests (ii) decomposers (iii) forests (iv) upper layer

3. (i) True (ii) False (iii) True (iv) False (v) True.

4. (i) Canopy (ii) Neem (iii) Carbon dioxide (iv) Large and tall

7. (i) - (c) (ii) - (d) (iii) - (b) (iv) - (a)

# Chapter - 18

# Waste Water Story

## Work Sheet-1

**Key Points :**

- Dirty water is called wastewater.
- Clean water is a basic need of human being. Clean water that is fit for use is unfortunately not available to all.
- Cleaning of water is a process of removing pollutants before it enters a water body or is reused.
- Sewage is waste water released by houses, industries, hospitals, offices and other users.
- Organic impurities are human faeces, animal waste and so on.
- Inorganic impurities are nitrates, phosphates, metals, etc.
- Dirty water contains disease causing bacteria and other microbes.
- In a home or a public building generally one set of pipes bring clean water.
- Treatment of wastewater involves physical, chemical, and biological processes.

- Eucalyptus trees absorb all surplus wastewater rapidly and release pure water vapour into the atmosphere.
- Chemicals like paints, solvents, insecticides, motor oil, and medicines may kill microbes that help purify water.
- To improve sanitation, sewage disposal systems are being encouraged. Examples are septic tanks, chemical toilets, composting pits.
- We should not defecate in the open. Water sources should be in healthy state.

## Questions

1. Tick the correct answer : (1 mark each)

   (i) Sewage is a-

   (a) solid waste (b) gaseous waste (c) liquid waste (d) none of thses

   (ii) Which one is an inorganic impurity?

   (a) pesticide (b) nitrate (c) urea (d) bacteria

   (iii) Which of the following is not a water borne disease?

   (a) cholera (b) asthma (c) dysentery (d) typhoid

   (iv) Which of the following is used for water treatment?

   (a) chlorine (b) washing soda (c) silica (d) nitrate

   (v) Which of the following is not a source of waste water?

   (a) houses (b) industries (c) hospitals (d) drains

2. Fill in the gaps : (1 mark each)

   (i) Urea is a _____ impurity.

   (ii) Waste water released by houses, industries, hospitals, offices and other users is called _____.

   (iii) Waste water is treated in a _____.

3. Mention True/ False : (1 mark each)

   (i) Cholera is a bacterial disease.

   (ii) Eucalyptus trees absorb wastewater.

   (iii) Bio gas is not a source of energy.

(iv) Waste water cannot be reused again.

4. Answer in one word : (1 mark each)

   (i) What type of impurities is found in waste water?

   (ii) Name the technique in which waste water is treated before use.

   (iii) Write the name of an inorganic impurity.

5. Answer the following questions : (2 marks each)

   (i) Name the processes in which waste water can be treated.

   (ii) Write the name of 4 water borne diseases.

6. Match the following columns:

| Column - A | Column - B |
|---|---|
| (i) Bacteria | (a) Herbicides |
| (ii) Organic Impurities | (b) Metals |
| (iii) Inorganic Impurities | (c) Phosphorus and nitrogen |
| (iv) Nutrients | (d) Typhoid |

7. Think and suggest some ways to minimise waste and pollutants and their source, taking your home as an example. Marks - 5

_____

_____

_____

_____

**Answers**

1. (i) (c) (ii) (b) (iii) (b) (iv) (a) (v) (d)
2. (i) organic (ii) sewage (iii) treatment plant
3. (i) True (ii) True (iii) False (iv) False
4. (i) pollutants (ii) water treatment (iii) urea
5. (i) Treatment of waste water involves physical, chemical, and biological processes.
6. (i) - (d) (ii) - (a) (iii) - (b) (iv) - (c)

# SAMPLE QUESTION PAPER

Class - VII

Subject - Science

Time: 3 hours

Full marks: 100

1. Choose the correct option from the following : Mark- 1 × 10

(i) Raw materials of photosynthesis are-

(a) Chlorophyll and sunlight (b) Water and sunlight

(c) Water and carbon dioxide (d) Carbon dioxide and sunlight

(ii) The first step of animal nutrition is-

(a) Assimilation (b) Absorption

(c) Ingestion (d) Digestion

(iii) Cellulose is a type of-

(a) Carbohydrate (b) Fat

(c) Protein (d) Vitamin

(iv) In terms of quality, the best wool producing country in the world is-

(a) India (b) China

(c) Australia (d) New Zealand

(v) The device used for measuring temperature is-

(a) Barometer (b) Thermometer

(c) Odometer (d) Voltameter

(vi) Which of the following is an inorganic acid?

(a) Citric acid (b) Nitric acid

(c) Acetic acid (d) None of these

(vii) Acid rain is due to-

(a) Carbonic acid (b) Formic acid

(c) Acetic acid (d) None of these

(viii) Formula of lime water-

(a) CaO (b) $Ca(OH)_2$

(c) $CaCO_3$ (d) $Mg(OH)_2$

(ix) The distance-time graph is a type of-

(a) Bar graph (b) Pie chart

(c) Line graph (d) None of these

(x) Cyclone alert can be given before-

(a) 12 hours (b) 6 hours

(c) 48 hours (d) 24 hours

2. Fill in the blanks : Mark - 1 × 10

(i) Carbohydrate produced during photosynthesis is stored in plant body as_____.

(ii) During _____stage of silk moth cocoon is produced.

(iii) Haemoglobin is present in _____ blood corpuscle.

(iv) The unit of asexual reproduction is _____.

(v) Maximum rainfall occurs at _____ climate region.

(vi) Soil containing more bigger sized particles is _____ .

(vii) The water and air are_____ conductors of heat.

(viii) One millionth of a second is called _____.

(ix) A thin wire present inside a bulb is called _____.

(x) The mirror fitted beside the driver of a vehicle is _____.

3. Write 'T' for true and 'F' for false statements : Mark- 1×10

(i) Chlorophyll is present in Cuscuta.

(ii) Amino acid is utilized in protein synthesis within the cell.

(iii) Blood pressure of vein is greater than that of artery.

(iv) The breathing rate of infant is less than adult.

(v) After fertilization the ovule is developed into a seed.

(vi) Marking on clinical thermometer is from 0°C to 100°C.

(vii) The symbols of all units are written in singular.

(viii) Electromagnet is present in electric bell.

(ix) Red eyed frog lives in water.

(x) Crystallization is a chemical change.

4. Match the following in column I with suitable in column II. Mark - 1 × 5

| Column-I | Column-II |
|---|---|
| (a) Bad conductor of heat | (i) Second |
| (b) Basic unit of time | (ii) Feet have webs |
| (c) Penguin | (iii) Seven colours |
| (d) Soap water | (iv) Insulator |
| (e) Rainbow | (v) Turn red litmus into blue |

5. Answer in one or two words : Mark - 1 × 10

(i) From which part of the alimentary canal HCl is secreted?

(ii) Name raw fibers found from animals?

(iii) Which instrument is used to hear the heart beat?

(iv) Write the name of the main excretory material present in urine.

(v) What is the range of laboratory thermometer?

(vi) Name the magnet whose magnetism can be switched 'ON – OFF'.

(vii) Name the acid present in curd?

(viii) What property of matter changes due to chemical change?

(ix) In which season, North-West monsoon flows?

(x) How many colours are there in white light?

6. Answer the following questions : ( any ten) Mark - 2 × 10

(i) Mention the names of the two parts of anther? Name the main food material oxidized during respiration.

(ii) Why the thermometer must be washed with an antiseptic solution before and after use.

(iii) Why the handle of pressure cooker is covered with thick plastic?

(iv) Why the body temperature of human body cannot be measured by laboratory thermometer?

(v) Why two thin blankets joined together is more comfortable than one thick blanket in winter?

(vi) Write the chemical equation of rusting.

(vii) What is fertilization?

(viii) What do you mean by uniform and non uniform motion?

(ix) Why a magnetic needle deflects when placed near a current carrying conductor?

(x) Compare the images formed by convex and concave lens.

(xi) Write two differences between artery and vein.

(xii) Mention the importance of transportation in organisms.

7. Answer the following questions (Any Five) : Mark - 3 × 5

(i) Define symbiosis? Explain with the help of suitable example.

(ii) What is reeling in sericulture? How silk thread is collected from the cocoon?

(iii) Write down three precautions needed while reading a laboratory thermometer in addition to the precautions taken while reading a clinical thermometer.

(iv) Which phenomenon of light is responsible for image formation in convex mirror? Write two differences between real and virtual images.

(v) Draw a closed electric circuit and indicate different components of it.

(vi) Name the process in which a pure substance is obtained from its solution. Write the composition and uses of stainless steel.

(vii) What precautions should be taken during rain with storm.

8. Answer the following questions : Mark - 5 × 4

(i) Give a schematic representation of blood circulation through human heart. Differentiate between self pollination and cross pollination. (3+2)

Or

Draw a neat diagram of the alimentary system of human and level its different parts. (5)

(ii) Why is the colour of blood red? Mention the functions of main three types of blood corpuscles. Name the two transporting tissues present in plants. (1+3+1)

(iii) List the precautions to be taken, while reading a clinical thermometer. Why the sun's heat cannot reach the earth by conduction or convection? (3+2)

Or

What is periodic motion? What is termed as the time of one complete oscillation?

Rajdhani express reaches to Dharmanagar from Agartala in 3 hours with a speed of 60 km/h. Calculate the distance between Agartala and Dharmanagar. (2+1+2)

(iv) Mention the characteristics of an image formed by plane mirror.

If the distance between object and plane mirror is 5 cm, what is the distance between object and image? Which lens is called magnifying glass? (3+1+1)

Or

Name two chemical indicator. You have been given three bottles containing acidic, basic and neutral solution. How will you identify them by a single litmus paper? Write the chemical name of 'totha'? (1+3+1)

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