

CHAPTER-18

WASTE WATER STORY

	Text book Exercise
Q.1	(Discussed and Done in textbook)
Q.2	What is sewage? Explain why it is harmful to discharge untreated sewage into rivers or seas.
A.	Sewage is a liquid waste released by homes, industries, hospitals, offices and other users which also includes rainwater that has run down the street during a storm or heavy rain. Sewage water contains harmful substances with it which washes off roads and rooftops. It is a complex mixture containing suspended solids, organic and inorganic impurities, and disease causing bacteria and other microbes. So when untreated sewage is discharged into rivers or seas, it will be dangerous for aquatic plants and animals.
Q.3	Why should oils and fats be not released in the drain? Explain.
A.	1.Oil and fats should not be released in the drain because they can harden and block the pipes. 2.In an open drain the fats block the soil pores reducing its effectiveness in filtering water.
Q.4	Describe the steps involved in getting clarified water from wastewater.
A.	Treatment of wastewater involves physical, chemical and biological processes. (a)Waste water is passed through bar screens to remove large objects like rags, sticks, cans, plastic packets, napkins etc. (b)After that water is passed to a grit and sand removal tank to allow sand, grit and pebbles to settle down. (c)Then it is allowed to large settling tank to permit settling of solid faeces called sludge, which is removed using scarper. (d) A skimmer removes the floatable solids like oil and grease. Water so cleared is called clarified water. (e)Air is pumped into the clarified water to help aerobic bacteria to grow and consume the wastes still remaining in clarified water. (f)After several hours, the suspended microbes settle at the bottom of the tank. The water is then removed from the top. (g)Finally Chlorination is used to kill the germs in filtered water. Now, the wastewater is fit for drinking purpose.
Q.5	What is sludge? Explain how it is treated.
A.	Solids waste like faeces settle at the bottom of tank during sedimentation is called sludge. Sludge is removed with a scraper and then transferred to a separate tank where it is decomposed by the anaerobic bacteria to produce biogas.
Q.6	Untreated human excreta is a health hazard. Explain.
A.	1.Untreated human excreta is a health hazard as it can cause water pollution and soil pollution. 2. Both the surface water and groundwater get polluted. 3.Thus, it becomes the most common route for water borne diseases which include cholera, typhoid, polio, meningitis, hepatitis and dysentery. It is also a big threat to sanitation.
Q.7	Name two chemicals used to disinfect water.
A.	Two chemicals used to disinfect water are chlorine and ozone.
Q.8	Explain the function of bar screens in a wastewater treatment plant.

A.		Bar screen in a wastewater treatment plant is used to remove the large objects like rags, sticks, cans, plastic packets and napkins.
Q.9		Explain the relationship between sanitation and disease.
A.		Sanitation and disease are closely related as lack of sanitation leads to unhygienic condition and ultimately disease. Proper sanitation is necessary to avoid certain kinds of disease. Where there is sanitation, there is no disease and vice versa.
Q.10		Outline your role as an active citizen in relation to sanitation.
A.		Role as an active citizen in relation to sanitation: (i) Contribute in maintaining sanitation at public places and should not scatter litter anywhere. (ii) Throwing garbage or waste at its desired place. (iii) Ensure that my surrounding and neighbourhood is clean and help the municipality in maintaining proper sanity. (iv) Preventing clogging of drains by not releasing oil and fat and solid waste into the drain. (v) Immediately inform the municipality about any sewage leakage and for the maintenance of dustbins.
		EXTRA QUESTIONS
Q.1		Define:
	a.	Sewerage
	b.	Sewers
	c.	Manhole
A.	a.	The network of sewers which carries sewage from the point of produced to the point of disposal.
	b.	A network of big and small pipes, called sewers, form sewerage.
	c.	These are holes made in sewers at regular intervals so that timely inspection and cleaning of sewers can be done through them.
Q.2		Which are other alternative arrangements for sewage disposal where sewage system does not exist?
A.		Septic tanks, chemical toilets and vermin processing toilets are other alternative arrangements for sewage disposal.
Q.3		Mention three ways of how you can control the sewage generated from your home.
A.		The ways are: 1. Cooking oil and fats should not be thrown down the drain. 2. Chemicals like paints, solvents, insecticides, medicines may kill the microbes that help purify water. So do not throw them down the drain. 3. Used tea leaves, solid food remains, soft toys, cotton, sanitary towel etc. should also be thrown in the dustbin. These wastes choke the drains and do not allow free flow of oxygen. This hampers the degradation process.

CHAPTER-17

FORESTS: OUR LIFE LINE

Textbook Exercise	
Q1.	Explain how animals dwelling in the forest help it grow and regenerate.
A.	<p>Animals dwelling in the forest help in various way for growth and regenerate. Some of them are:</p> <p>(i) Herbivores animals clear the land by eating grass for the new growth of vegetation.</p> <p>(ii) Animals also help in the seed dispersal and pollination.</p> <p>(iii) Dead and decaying bodies of animals convert to humus after decomposition which increase the fertility of the soil of the forest.</p> <p>(iv) Dung of animals provide nutrient to various types of seedling to grow.</p>
Q2.	Explain how forests prevent floods.
A.	<p>1.Forest acts as a natural absorber of rainwater and allows it to seep.</p> <p>2.It helps in controlling the flow of water and slows it down which helps in preventing flood.</p> <p>3.Also, the trees present in the forest prevents the rain from directly hitting the ground and bind the soil together which helps in absorption of the rain water and thus prevent flood.</p>
Q3.	What are decomposers? Name any two of them. What do they do in the forest?
A.	The micro-organisms which convert the dead plants and animals to humus are known as decomposers. Bacteria, Mushrooms etc. are common decomposer. They decompose dead organisms and provide nutrient to trees.
Q4.	Explain the role of forest in maintaining the balance between oxygen and carbon dioxide in the atmosphere.
A.	<p>1.Plants release oxygen as a bi product during the process of photosynthesis. This oxygen is inhaled by animals for respiration.</p> <p>2.This respiration process releases carbon dioxide which is used again by plants during photosynthesis.</p> <p>In this way, use and consumption of oxygen and carbon dioxide goes on. They thus maintain the balance of oxygen and carbon dioxide in the atmosphere.</p> <div style="text-align: center;"> <pre> graph TD Plants -- O2 --> Animals Animals -- CO2 --> Plants </pre> </div>
Q5.	Explain why there is no waste in a forest.
A.	There is no waste in a forest because whatever produced here are utilized by the other organisms or plants for sustainability. Even the waste materials and dead remains which are produced are biodegradable and converted into humus which returns back to the soil as nutrient
Q6.	List five products we get from forests?
A.	Products that we get from forests includes: (i) Wood (ii) Medicine (iii) Spice (iv) Fodder (v) Honey
Q7.	(discussed and done in textbook)

Q8.		Why should we worry about the conditions and issues related to forests far from us?
A.		We should worry about the conditions and issues related to forests far from us because more or less we are dependent on it because: (i) The amount of carbon dioxide in air will increase if forest will disappear and thus less oxygen in atmosphere breathe in. (ii) There will be more soil erosion and thus increase in floods as soil will not able to hold water. (iii) Increase in the percentage of carbon dioxide will also leads to global warming. (iv) Deforestation will endanger our life and environment and also there will be no shelter for animals. (v) There is also imbalance in nature and thus causing climate changes and less rainfall.
Q9.		Explain why there is a need of variety of animals and plants in a forest.
A.		By harbouring greater variety of plants, the forest provides greater opportunities for food and habitat for the herbivores, 1.Larger number of herbivores means increased availability of food for a variety of carnivores. 2.The wide variety of animals helps the forest to regenerate and grow. 3.Varieties of animals are necessary for their survival and maintenance of food chain. For example grass is eaten by insects, which in turn, are eaten by the frog. The frog is consumed by snakes which are eaten by eagles. Thus it forms a food chain. 4.Every part of the forest is dependent on the other parts. If we remove one component, all other components would be affected.
		Q10 to Q13 (Discussed and Done in textbook)
		EXTRA QUESTIONS
Q1.		Define
	a.	Forest
	b.	Canopy
	c.	Crown
	d.	Food chain
	e.	Understorey
A.	a.	A large area of land where various plants, animals and microorganisms exist in their natural homes is called forest .
	b.	A roof or cover formed by the trees branches in the upper region of forest is called a canopy .
	c.	The part of a tree, above the stem, which has branches is known as the crown of the tree. Crowns differ in shape and size in different trees.
	d.	Food chain is a chain in which one organism eats another. It is a process of eating and being eaten.
	e.	The plant layers found at different heights below the canopy are known as understorey . Herbs, shrubs and small trees form the understorey .

CHAPTER-16
WATER: A PRECIOUS RESOURCE

		Text book Exercise
Q1.		(Discussed and marked in textbook)
Q2.		Explain how groundwater is recharged?
A.		The rainwater and water from other sources such as rivers and ponds etc. seeps through the soil and fills the empty spaces and cracks deep below the ground. The process of seeping of water into the ground is called infiltration. The groundwater is recharged through this process.
Q3.		There are ten tube wells in a lane of fifty houses. What could be the long-term impact on the water table?
A.		This will lead to exploitation of water resource present underground if people of all the fifty houses in the lane use the ten tube wells regularly. In long term, the water level will go below and thus the depletion of water table.
Q4.		You have been asked to maintain a garden. How will you minimize the use of water?
A.		For minimising the use of water in maintenance of garden, i will use the technique of drip irrigation. In this method, required amount water is supplied directly to the roots of the plants using narrow pipes thus preventing the loss of water.
Q5.		Explain the factors responsible for the depletion of water table.
A.		Factors responsible for the depletion of water level are- (i) Increase in the demand of water due to overpopulation. (ii) Deforestation leads to less rainfall which affect the recharge of river and pounds. (iii) Increase the number of industries as they use a lot of water for their purpose. (iv) Insignificant uses in agriculture activities as in many parts of the world people uses old techniques which waste a lot of water. (v) Lack awareness in people is also a main reason behind the depletion of water level as they waste water without any uses.
		Q6 to Q9 (discussed and marked in textbook)
		EXTRA QUESTIONS
Q1.		Define:
	a.	Ground water
	b.	Water cycle
	c.	Drip irrigation
	d.	Water pollution
A.	a.	The water stored under the ground between layers of rocks is called ground water . It is the most important source of water. The upper limit of ground water at a place is called the water table at that place.
	b.	The continuous circulation of water from the earth to the atmosphere and back again is called water cycle .
	c.	A technique of watering the plants by making use of narrow pipes which deliver water directly to the roots of the plants is called drip irrigation .
	d.	Contamination of water by harmful substances and germs is called water pollution .
Q2.		From where do the following usually get water? In which form is water present in them?
	a.	Clouds
	b.	Plants
	c.	Mountain tops
	d.	Aquifer
	e.	Animals
A.	a.	From land in the form of water vapour.

	b.	From soil in the form of liquid.
	c.	From atmosphere in the form of solid.
	d.	From rain in the form of underground water.
	e.	From water bodies in the form of liquid.
Q3.		Water is very precious for all the living beings. What will happen in future if we do not save water now?
A.		Water is known as the most precious element to sustain life. .In the absence of water, living beings cannot survive. Lack of water can lead to dramatic consequences. There will be no water to drink, no food to eat as plants need water to get nutrients from the soil to prepare their food. World without green plant means no food, no oxygen, not enough rain, and innumerable other problems. The marine ecosystem will be unbalanced. In short life without water will be impossible.
Q4.		Draw a well labelled diagram of water cycle.
A.		

CHAPTER-15

LIGHT

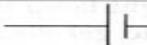
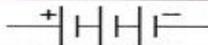
	Q1, Q2 and Q3 (Discussed and marked in text book)	
Q4.	State the characteristic of the image formed by a plane mirror.	
A.	Characteristics of the image formed by a plane mirror: (i) The image formed is virtual. (ii) The image is laterally inverted. (iii) It is of the same size as the object. (iv) The image is situated at the same distance from the mirror as the object. (v) The image is erected.	
Q5.	Find out the letters of English alphabet or any other language known to you in which the image formed in plane mirror appears exactly like the letter itself. Discuss your findings.	
A.	A, H, I, M, O, T, U, V, W, X, Y are the letters of English alphabet in which the image formed in a plane mirror appears exactly like the letter itself.	
Q6.	What is a virtual image? Give one situation where a virtual image is formed.	
A.	The image that cannot be formed or obtained on the screen is called virtual image When we stand in front of our dressing table mirror, we use to see our virtual image. The virtual image is formed in case of plane, concave and convex mirror.	
Q7.	State two differences between a convex and a concave lens.	
A.	Convex lens (1) Thick at middle, thin at edge. (2) A convex lens converges the light falling on it. Therefore, it is called a converging lens.	Concave lens (1) Thin at middle, thick at edge. (2) A concave lens diverges the light falling on it Therefore, it is called a diverging lens.
Q8.	Give one use each of a concave and a convex mirror.	
A.	Concave mirror – used by dentist to see enlarged image of teeth. Convex mirror – used in vehicles as rear-view mirror.	
Q9.	Which type of mirror can form a real image?	
A.	Concave mirror can form a real image.	
Q10.	Which type of lens forms always a virtual image?	
A.	Concave lens always forms a virtual image.	
	Q11, Q12 and Q13 (Discussed and marked in text book)	

		EXTRA QUESTIONS
Q1.		What is reflection of light?
A.		When light falls on a shiny surface, it bounces back. This phenomenon is called reflection of light.
Q2.		What is real image?
A.		An image formed on a screen is called real image.
Q3.		What did Newton demonstrate with the help of the Newton's disc?
A.		Newton demonstrates with the help of the Newton's disc, that white light is composed of seven colours. When this Newton's disc rotates very fast, all these seven colours combine together and appears white.
Q4.		Why is the word 'AMBULANCE' printed laterally inverted on an ambulance van?
A.		The word 'AMBULANCE' is written laterally inverted on an ambulance van so that when the driver of a vehicle ahead of an ambulance looks in his rear-view mirror, he can read ambulance written on it correctly and give way to it.
Q5.		Why convex mirror is used as side mirror in vehicle?
A.		Convex mirror is used as side mirror in vehicle because it always forms erect and smaller size image so more images can fit in to it and it provides larger field of view, which help the drivers to see the traffic behind them.

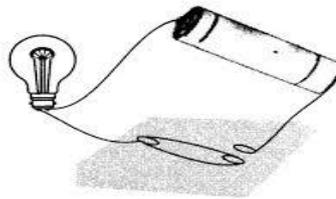
CHAPTER-14 ELECTRIC CURRENT AND ITS EFFECTS

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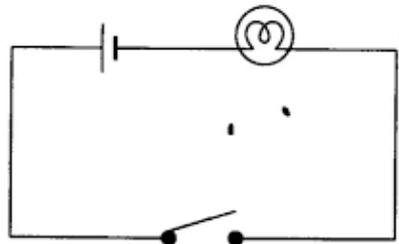
A.

Component of electric circuit	Symbol
Connecting wires	—————
Switch in the 'OFF' position	
Bulb	
Cell	
Switch in the 'ON' position	
Battery	

- Q2. Draw the circuit diagram to represent the circuit shown in the figure given.**



A.



Q3 and Q4 (Discussed and done in text book)

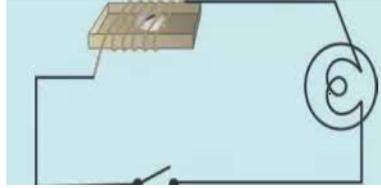
- Q5. Name any two effects of electric current.**

- A.** (i) Heating effect
(ii) Magnetic effect

- Q6. When the current is switched on through a wire, a compass needle kept nearby gets deflected from its north-south position. Explain.**

- A.** When electric current passes through a wire, it behaves like a magnet, because of it, a compass needle kept nearby gets deflected from its north-south position.

- Q7. Will the compass needle show the deflection when the switch in the circuit shown by figure given below is closed?**



- A.** No, the circuit is not having any source of electricity. Therefore, there will be no flow of electric current through and thus there will be no magnetic effect and neither the deflection of the needle.

Q8 and Q9 (Discussed and marked in text book)

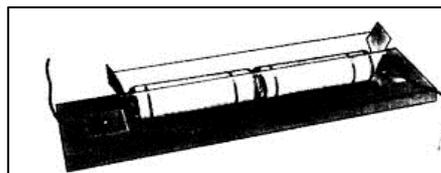
- Q10. Do you think an electromagnet can be used for separating plastic bags from a garbage heap? Explain.**

- A.** No, electromagnets attract only the magnetic material like iron. So, it cannot be used for separating plastic from garbage.

- Q11. An electrician is carrying out some repairs in your house. He wants to replace a fuse by a piece of wire. Would you agree? Give reasons for your response.**

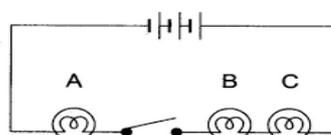
- A.** No, we cannot agree, as replacing a fuse by a piece of wire should be dangerous because this wire could have high melting point so in case of overloading circuit will not break and cause accident.

- Q12. Zubeda made an electric circuit using a cell holder shown in Fig. below, a switch and a bulb. When she put the switch in the ON position, the bulb did not glow. Help Zubeda in identifying the possible defects in the circuit.**



- A.** Possible defect:
- (i) Bulb may have fused.
 - (ii) Rubber band of cell holder may not be tight and connections are loose
 - (ii) Terminals of the cells may not be in the correct positions

- Q13. In the circuit shown in figure given below:**



(i) Would any of bulb will glow when the switch is in the 'OFF' position?

(ii) What will be the order in which bulb A, B, C will glow when switch is moved to the 'ON' position?

- A. (i) No, none of the bulb will glow when the switch is in the 'OFF' position.
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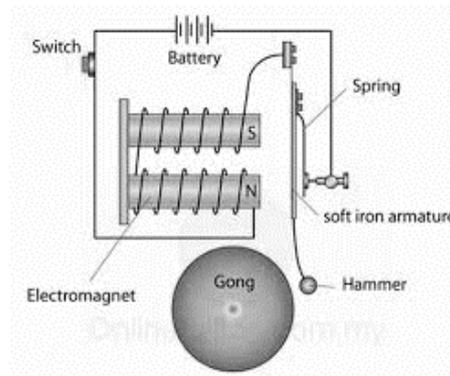
EXTRA QUESTIONS

Q1. How will you make an iron nail act as magnet?

- A. Wind a wire tightly around the nail and connect the free ends of the wire to the terminals of a cell through a switch. Now when the current passes through the wire, because of the electromagnet effect, this nail will function as magnet.

Q2. What is the function of the electromagnet in an electric bell?

A.



1. In an electric bell there is a coil of wire wound on an iron piece. This coil act as electromagnet.

2. An iron strip with a hammer at one end is kept close to the electromagnet.

3. There is a contact screw near the strip.

4. When the current passes, coil act as magnet and attract the iron strip, meanwhile hammer produces sound but this break the circuit so coil doesn't act as electromagnet, and strip come in contact with the screw again.

Q3 What is the heating effect of electric current?

- A. When an electric current passes through a wire it becomes hot, this is the heating effect of electric current, electric iron and electric heater work on the heating effect of electric current.

Q4. What characteristics would you prefer for a fuse wire?

- A. (i) Fuse wire must have low melting point.
(ii) It should break when large electric current passes through them.

Q5. Define:

1. Battery
2. Electric fuse

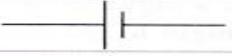
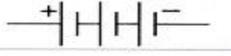
3. Electromagnet

- A. (1) **Battery:** Some activities need more than one cell, so we connect two or more cells together such as positive terminal of one cell is connected to the negative terminal of the next cell. Such combinations of two or more cells is called a battery.
- (2) **Electric fuse:** Electric fuse is a safety device, that stop current from passing through it when it is overloaded
- (3) **Electromagnet:** A current carrying coil of an insulated wire wrapped around a piece of iron is called an electromagnet.

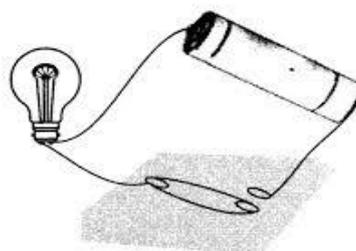
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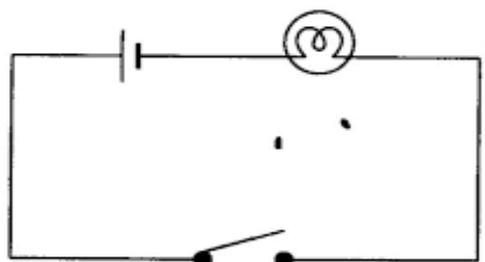
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Component of electric circuit	Symbol
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Q2. Draw the circuit diagram to represent the circuit shown in the figure given.



A.



Q3 and Q4 (Discussed and done in text book)

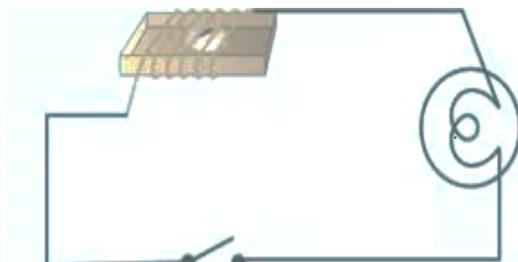
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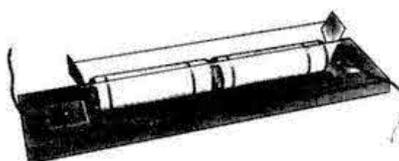
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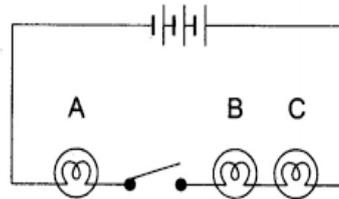
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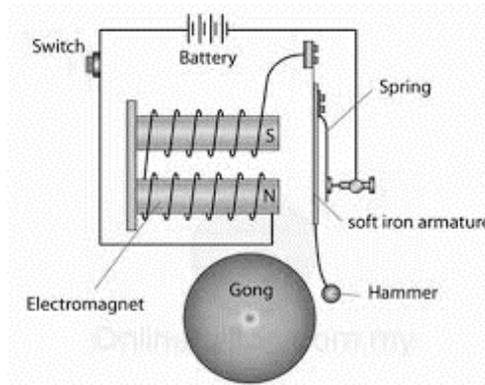
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CHAPTER-13

MOTION AND TIME

Textbook Exercise

Q1 and Q2 (Discussed and marked in text book)

Q3. A simple pendulum takes 32 s to complete 20 oscillations. What is the time period of the pendulum?

A. Number of oscillations = 20

Total time taken = 32 s

We know that time period of a given pendulum is the time taken by it to complete one oscillation.

Thus, Time period = Total time taken/Number of oscillations = $32 \text{ s} / 20 = 1.6 \text{ s}$

Q.4 The distance between two stations is 240 km. A train takes 4 hours to cover this distance. Calculate the speed of the train.

The distance between two stations = 240 Km

Time taken to cover this distance = 4 Hr

So speed = Distance/Time = $240 \text{ Km} / 4 \text{ Hr} = 60 \text{ km/h}$

Therefore, speed of the train will be 60km/h

Q5. The odometer of a car reads 57321.0 km when the clock shows the time 8.30 am. What is the distance moved by car, if at 8:50 am, the odometer reading has changed to 57336.0 km? Calculate the speed of car in km/min during this time. Express the speed in km/h also

A. Initial reading of odometer = 57321.0 Km

Total Distance covered = Final reading of odometer - Initial reading of odometer

$$= 57336.0 - 57321.0$$

$$= 15.0 \text{ Km}$$

Initial Time = 8:30 am

Final Time = 8:50 am

Total time taken = Final time - Initial time

$$= 8:50 - 8:30$$

$$= 20 \text{ mins}$$

We Know that, Speed = distance covered/ time taken = $15 \text{ km} / 20 \text{ min} = 0.75$

km/min

Speed in Km/h = $0.75 \times 60 = 45 \text{ km/h}$

Q6. Salma takes 15 minutes from her house to reach her school on bicycle. If the bicycle has a speed of 2 m/s, calculate the distance between her house and the school.

A. Speed of bicycle = 2 m/s

Total time taken = 15 min = $15 \times 60 = 900\text{s}$

We know that, the distance covered = Speed \times Time taken = $2 \times 900 = 1800\text{m}$
= 1.8km

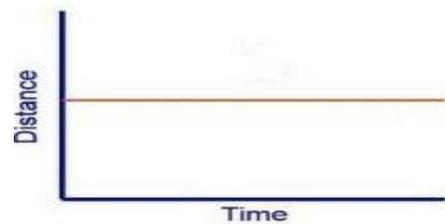
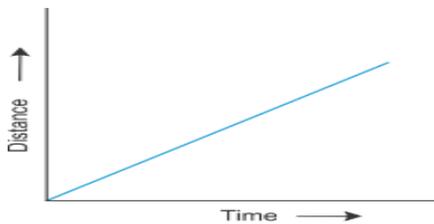
Distance between house and school is 1800 m or 1.8 Km

Q7. Show the shape of the distance-time graph for the motion in the following cases:

(i) A car moving with a constant speed.

(ii) A car parked on a side road.

A.



Q8, Q9 and Q10 (Discussed and marked in textbook)

Q11. Suppose the two photographs, shown in Fig. 13.1 and Fig.13.2, had been taken at an interval of 10 seconds. If a distance of 100 meters is shown by 1 cm in these photographs, calculate the speed of the blue car.

A. Speed = $100\text{ m}/10\text{s} = 10\text{ m/s}$

Q12 and Q13 (Discussed and marked in textbook)

EXTRA QUESTIONS

Q1. Define: Speed.

A. Distance covered by a moving object in a unit time is called speed.

So speed = distance/time

The SI unit of speed is meter/second

Q2. Differentiate between uniform motion and non-uniform motion.

A.

Uniform motion

Non uniform motion

(i) In uniform motion an object moves along a straight line with constant speed.

In non-uniform motion an object moves along a straight line with a variable speed.

(ii) Cover equal distances in equal interval of time.

(ii) Cover unequal distances in equal interval of time

Q3. How do pendulum clock work?

A. Pendulum of a certain length always takes the same amount of time to swing back and forth and this is how it keeps the clock on time.

Q4. Differentiate between speedometer and odometer.

A. Speedometer records the speed of vehicle. Speedometer read it in km/h while odometer measures distance moved by the vehicle. Odometer read distance in km.

Q5. A spaceship travels 36000 km in one hour. Express its speed in km/s.

A. Distance covered= 36000 km

Time taken= 1hr = 3600 s

Speed = distance/time= 36000 km/3600s =10 km/s

Q6. A boy walks at a speed of 4 km/h. How much distance will he cover in 5 hours?

A. Speed of the boy= 4km/h

Time given= 5 hours

Distance= speed \times time= 4 \times 5 = 20 km

Q7. A cyclist covers a distance of 50 km in 5 hours. Calculate his speed and convert it into m/s.

A. Distance covered= 50 km

Time taken = 5 h

Speed = distance/ time= 50 km/ 5 h= 10 km/h

In m/s=10 \times 5/18

=2.77m/s

CHAPTER-12

REPRODUCTION IN PLANTS

Text book Exercise

Q1. Discussed and Marked in TB

Q2. Describe the different methods of asexual reproduction. Give examples.

A. Different methods of asexual reproduction are:

1. Budding-This method is used by unicellular plants like yeasts. The yeast cell produces a bud which increases in size. The bud develops to certain size and detaches from the mother cell to produce a new yeast cell. The nucleus of mother cell also divides and bud gets its own nucleus.

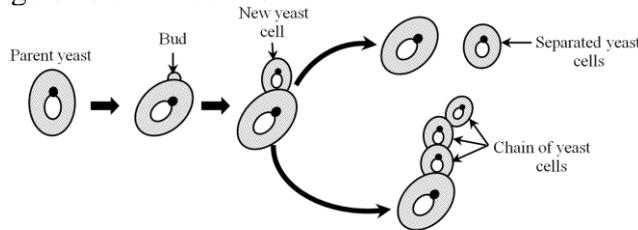


Fig. 4 Budding in yeast

2. Fragmentation-In some simple plants, the plant body is divided into smaller fragments. Each fragment then develops into a new plant. eg: Spirogyra

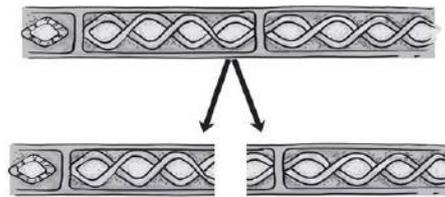


Fig. 12.6 Fragmentation in spirogyra (an alga)

3. Spore Formation-Special spore bearing organs are present in some plants, especially in fungi, mosses and ferns. These spores germinate to develop into a new plant.

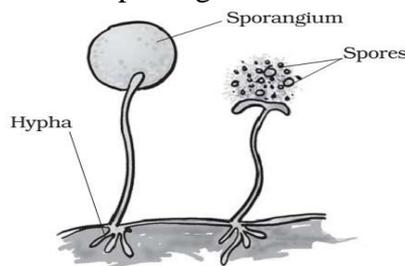


Fig. 12.7 Reproduction through spore formation in fungus

4. Vegetative Propagation-When a new plant is developed by a vegetative part, such as root, stem and leaf, it is known as vegetative propagation.

Q3. Explain what you understand by sexual reproduction.

A. Sexual reproduction means involvement of two parents in the process of reproduction. In sexual reproduction male gamete and female gamete fuse to form a zygote. The new individual is not identical to either of the parents.

Q4. State the main difference between asexual and sexual reproduction.

A. Asexual Reproduction

- (i) One parent is involved.
- (ii) New generation is identical or true copy of their parent.

Sexual Reproduction

- (i) Two parents are involved.
- (ii) New born are not similar to their parents.
- (iii) It requires the formation of gametes.

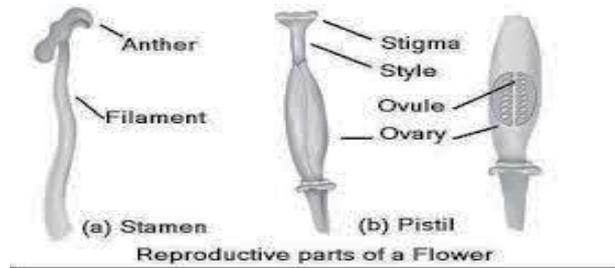
(iii) It doesn't require the formation of gametes.

(iv) Special organs for reproduction are required.

(iv) Special organs for reproduction are not required.

Q5. Sketch the reproductive parts of a flower.

A.



Q6. Explain the difference between self-pollination and cross-pollination.

A.

Self-Pollination

Cross- Pollination

(i) Transfer of pollen from the stamen to the pistil of the same flower or another flower on the same plant.

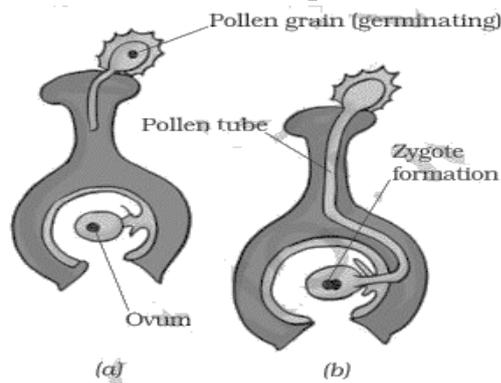
(i) Transfer of pollen from the stamen of one flower to the pistil of another flower of another plants of the same kind.

(ii) External medium is not necessarily required.

(ii) External medium is required.

Q7. How does the process of fertilization take place in flowers?

A.



1. When pollen lands on stigma, it germinates and give rise to a pollen tube that passes through the style and reaches to the ovary of a pistil.

2. When the pollen tube reaches to the ovule, it releases the male gamete.

3. A male gamete fuses with the female gamete in ovule. This process is known as fertilization.

4. The cell which is formed by the fusion of male and female gamete is known as zygote. This zygote divides several times in order to form embryo.

Q8. Describe the various ways by which seeds are dispersed.

A.

Various agents by which seeds are dispersed are:

1. Wind-Light seeds or hairy seeds and hairy fruit get blown off with the wind to far away places. Examples: Sunflower, maple, drumsticks etc.

2. Water-Fruits or seeds which develop floating ability in the form of spongy or fibrous outer coat are carried away with water to different places. Example: Coconut

3. Animals or birds-

i). Seeds like xanthium have spines which help them to stick to fur or skin of the animals.

ii) Some seeds eaten by birds and animals along with fruit pass out unharmed in waste. They germinate where they fall.

4. Bursting- Some seeds are dispersed when the fruits burst with sudden jerks and the seeds are scattered far from the parent plant. Examples: castor and balsam.

Q9. And Q10.(Discussed and Done in TB)

EXTRA QUESTIONS

Q1. Coconut is a large and heavy fruit. How is it adapted for dispersal by water?

A. Coconut is a large and heavy fruit, even then it is adapted for dispersal by water because coconut fruit develops spongy fibres to help it to float in water. Coconut tree grows near sea shore. So it floats in water and is carried away from one place to another by water currents.

Q2. What are the advantages of vegetative propagation?

A. Various advantages of vegetative propagation are:

i.Plants produced by vegetative propagation take less time to grow and bear flowers and fruits earlier than those produced from seeds.

iiThe new plants are exact copies of the parent plant.

Q3. Write the advantages of seed dispersal.

A. The advantages of seed dispersal are:

I. Seeds would grow in to healthy plants.

II. Seed dispersal prevents competition between the parent plant and its own seedlings for sunlight, water and minerals.

III. It also enables the plants to invade new habitats for wider distribution.

Q4. How does a new plant grow from the leaves?

A. In some plants buds arise in the margin of leaves. eg: Bryophyllum. If a leaf of this plant falls on a moist soil, each bud can give rise to a new plant.

Q5. Do you think insect- pollinated flowers can also be pollinated by wind? Why?

Insect-pollinated flowers cannot be pollinated by wind because insect-pollinated flowers are different in structure from wind-pollinated flowers.

1. In insect pollinated flowers anthers and pistils remain covered by petals and they have large, heavy and sticky pollens. So they will stick onto the insect.

2. Wind pollinated flowers have large anthers that hang outwards. Their pollen grains are light and small and easily carried away by wind.

Q.6 Define:

a Vegetative buds: These are the buds in the axil (point of attachment of the leaf at the node) of leaves which develop into shoots are called vegetative buds.

b Pollination: Transfer of pollens from the anther to the stigma of a flower is called pollination.

c Dispersal of seeds: Scattering of seeds over a wide area away from the parent plant is known as dispersal of seeds.

d Gametes: The special reproductive cells involved in sexual reproduction are called gametes.

CHAPTER-9 SOIL

Text Book Exercise

Q1 to Q3 and Q10(Discussed and done in textbook)

Q4. Explain how soil is formed?

A. The soil is formed by the process of weathering in which the rocks break down by the action of wind, water and climate. It is a very slow process and big rocks get converted into soil.

Q5. How is clayey soil useful for crops?

A. Clayey soil is very useful for crops because:

- (i) It has very good water retaining capacity.
- (ii) This soil is rich in humus and is very fertile.
- (iii) It contains useful organic minerals.

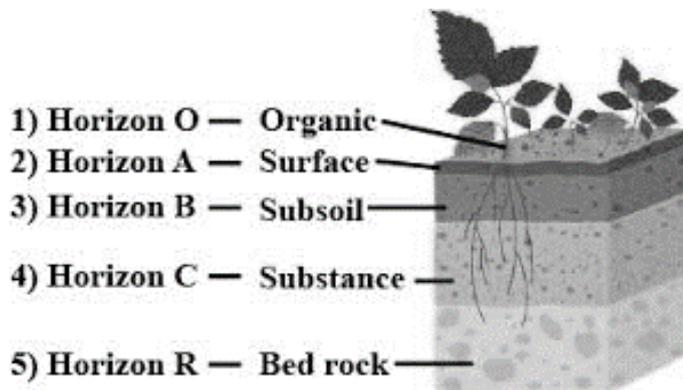
These properties of clayey soil is very useful for growing crops.

Q6. List the difference between clayey soil, loamy soil and sandy soil.

Clayey Soil	Sandy Soil	Loamy Soil
i. Proportion of fine particle is large.	i. Proportion of big particles is large	i. Proportion of fine and big particles is almost same.
ii. It has least percolation rate of water.	ii. It has highest percolation rate of water.	ii. It has more percolation rate than clayey soil and lesser than sandy soil.
iii. It has highest water holding capacity	iii. It has least water holding capacity.	iii. It has right water holding capacity.

Q7. Sketch the cross section of soil and label the various layers.

A.



A vertical section through different layers of the soil is called the soil profile. Each layer differs in feel (texture), colour, depth and chemical composition. These layers are referred to as horizons.

1. The uppermost horizon is generally dark in colour as it is rich in humus and minerals. The humus makes the soil fertile and provides nutrients to growing plants. This layer is generally soft, porous and can retain more water. It is called the topsoil or the A horizon.

2. The next layer has a lesser amount of humus but more of minerals. This layer is generally harder and more compact and is called the B-horizon or the middle layer.

3. The third layer is the C-horizon, which is made up of small lumps of rocks with cracks and crevices.

4. Below this layer is the bedrock, which is hard and difficult to dig with a spade

Q8. Razia conducted an experiment in the field related to the rate of percolation. She observed that it took 40 minutes for 200 ml of water to percolate through the soil sample. Calculate the rate of percolation.

A. Time taken for percolation = 40 min

We know that,

Rate of percolation(ml/min)=amount of water/percolation time

$200/40=5$ ml/min

Q9. Explain how soil pollution and soil erosion could be prevented?

A. (i) Plantation should be encouraged because plant roots firmly bind the soil and help in preventing erosion.

(ii) Methods like crop rotation and mixed farming should be followed.

(iii) Use of organic fertilizers and manure instead of synthetic.

(iv) Pesticides and insecticides should be used in limited quantity and find natural way to prevent it.

(v) Plastic bags should be banned because it doesn't decompose and gives rise to soil pollution.

(vi) Industrial waste shouldn't be dumped directly as it kills necessary micro-organisms of soil.

Extra Questions:

Q1. Which of the following situations — 'A' or 'B' — is advantageous for absorption of water and minerals? Why?

Situation 'A': Growth and branching of roots in the C-horizon.

Situation 'B': Growth and branching of roots in A and B-horizons

A. Situation 'B' is advantageous for absorption of water and minerals.

This is because A-horizon is top layer of soil and is rich in minerals and humus. The plant roots grow in the topsoil. The roots of some of the trees are however, able to reach B horizon (subsoil). Subsoil is also rich in soluble minerals.

Q2. Is it a good practice to remove grass and small plants that are growing in an open unused field? Give reason to support your answer.

A. No, it is not a good practice to remove grass and small plants growing in an open, unused field because the plants cover the soil surface.

Their roots bind the soil particles, holding and adhering them in place.

It helps in preventing the topsoil from being washed off during heavy rain, floods and winds.

In this way, soil erosion is prevented and top soil layer is preserved for growing

Q3. Continuously water-logged soils are disadvantageous for plant growth. Why?

A. 1. Roots although underground possesses living cells that require oxygen for respiration and production of energy.

2. They absorb oxygen that is present in the spaces between soil particles. But in water-logged soils, water occupies spaces between soil particles and pushes the oxygen out into the atmosphere.

3. Thus, roots are deprived of oxygen and this affects the plant growth

Q4. Explain, why government is banning the use of polythene bags?

A. Polythene bags and plastics pollute the soil. They also kill the organisms living in the soil. That is why there is a demand to ban polythene bags and plastics.

Q5. Define soil and its various constituents

A. A mixture of rock particles and humus is called soil.

Its various constituents are:

i Rock particles- It constitute 90% by weight of soil.

ii Humus- increases its water holding capacity.

iii Water- helps the plants to take dissolved minerals.

iv. Air- helps the soil loose and fit for ploughing.

v. Microorganisms- convert dead and decayed matter in to humus.

Q6. Why is the earthworm referred as a farmer's friend?

A. Earthworms improve the quality of soil by mixing its layers and making the soil plough able

Q.7 Define the following:

1)**Soil erosion**: The removal of fertile top-soil from land by wind or water is called soil erosion.

2)**Humus**: The organic matter formed by the decomposition of dead plants and animals by the micro-organisms (like certain bacteria and fungi) is called humus.

CHAPTER-8

WINDS, STORMS AND CYCLONES

Text Book Exercise

Q1, Q8 & Q9 (Discussed and done in textbook)

Q2. Suggest two methods to find out wind direction at given place.

A. Two methods to find out wind direction at a given place are:

(i) Take some sand and release it from height. The direction in which the sand starts flowing is the direction of the wind.

(ii) Take an air balloon and releases it in the open space. The balloon will starts moving in one direction which will gives an idea about the direction of the wind at that place.

Q3. State two experiences that made you think that air exerts pressure (other than given in the text)

A. (i) When we fill air in a balloon it inflates due to pressure exerted by air. Also when it is overfilled with air it bursts due to excess air pressure.

(ii) When we hang a banner in a place of moving fast air, it tears due to the pressure exerted by the air.

Q4. You want to buy a house. Would you like to buy a house having windows but not ventilators? Explain answer.

A. Ventilators are important for the circulation of air. Warm air is lighter which rises up and exit from the ventilators. Cool air is heavier and thus move in through window making the room comfortable for living.

Q5. Explain, why holes are made in hanging banners and hoardings?

A. Holes are made in hanging banners and hoardings in order to tackle the air pressure. The air get passed through these holes made on the hoardings or banners and thus it reduces the pressure of air on them. Therefore, the hoardings do not get blown away or torn due to air pressure.

Q6. How will you help your neighbours in case cyclone approaches your village/town?

A. I will help by following ways:

(i) By warning everyone about the coming danger.

(ii) Searching for shelter.

(iii) Keeping storage of water and food.

(iv) Setting up first aid facility.

Q7. What planning is required in advance to deal with the situation created by a Cyclone?

- QA.** (i) Setting up cyclone warning system.
(ii) Setting up cyclone shelter.
(iii) Setting up food and water storage.
(iv) Setting up first aid facility.

Extra Questions:

Q1. Define:

a) **Thunderstorm**

b) **Cyclone**

c) **Tornado**

d) **Monsoon winds**

A. a) **Thunderstorm** The movement of falling water along with lightning, heavy rain and strong winds is called thunderstorm. Thunderstorm occurs frequently in hot and humid tropical area, such as India.

b) **Cyclone** A cyclone is a storm which develops on the sea and has high speed winds swirling around a low pressure centre called the eye of the storm.

c) **Tornado** A tornado is a violent storm with very strong circular winds over a small area

d) **Monsoon winds** Periodic winds that carry winds and bring rain, and flow from ocean to land called monsoon winds.

Q2. Why is Chandigarh unlikely to be affected by a cyclone?

A. Chandigarh is unlikely to be affected by a cyclone because it is not near the sea or ocean

Q3. Name the ocean which is mainly responsible to bring rain bearing monsoon winds to Kerala coast in June every year.

A. Indian ocean is mainly responsible to bring rain bearing monsoon winds to Kerala coast in June every year.

Q4. To expel hot air out of the kitchen, A has an exhaust fan fitted on the window of her kitchen and B has a similar exhaust fan fitted on the wall near the ceiling of her kitchen.

Which of the exhaust fan will expel the hot air more effectively? Explain why?

A. B's exhaust fan will expel the hot air more effectively because hot air rises up and her fan is at greater height than A's exhaust fan.

Q5. Why is it advisable not to shut all the doors and windows during a storm?

A. During storms, heavy winds passing over the house creates a low pressure. The high pressure inside the house tries to fill the low pressure outside. Since, this pressure is stuck inside the house. Therefore, it pushes or lifts the roof off. So, unless the house is well ventilated, the roof is more likely to blow off in a strong wind.

Q6. A flat in Mumbai with a balcony facing the sea has some clothes hung on a clothes line in the balcony. Towards which direction, the clothes will be blown in the afternoon? Explain it

A. In the afternoon, the land gets heated faster than the water. The air over the land becomes hotter and rises up, creating a drop in pressure. This causes the winds to flow from the sea towards the land. Thus, the clothes will be blown towards the house because of sea breeze flowing towards the land.

Q7. When strong/high speed wind blows, an umbrella held upright at times gets upturned. Explain the reason.

A. High speed wind passing over the umbrella creates low pressure above the umbrella. Therefore, the pressure below the umbrella upturns it.

Q8. Suggest some precautions to be taken to prevent the roof of a tin sheet from flying away during a fierce wind storm.

A. Some precautions are:
i. Put heavy stones on it.
ii. Screw it tight.

CHAPTER-5

ACIDS, BASES AND SALTS

Text Book Exercise

Q2, Q.3 & Q6 (discussed and done in textbook)

Q.1 State differences between acids and bases.

S.	ACIDS	BASES
1.	Acids are sour in taste.	Bases are bitter in taste.
2.	It turns blue litmus paper red.	It turns red litmus paper blue.
3.	It doesn't change the colour of turmeric indicator.	It changes the colour of turmeric indicator to reddish brown.
4.	It doesn't feel soapy on touching.	It feels soapy on touching.

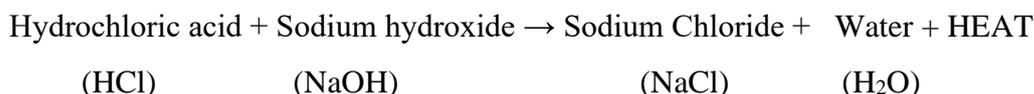
Q.4 Is the distilled water acidic, basic or neutral? How would you verify it?

- A.4**
1. It is used as indicator to determine whether the given solution is acidic or basic.
 2. Distilled water is neutral. It can be verified with the help of red and blue litmus paper.
 3. It shows no change with both kind of litmus paper.

Q.5 Describe the process of neutralisation with the help of an example.

- A.5** The process in which an acid reacts with a base to form salt and water with evolution of heat is known as neutralisation reaction.

The reaction is given below:



Q.7 Dona has a few bottles of soft drink in his restaurant. But, unfortunately these are not labelled. She has to serve the drinks on the demand of customers. One customer wants acidic drink; another wants basic and third one wants neutral drink. How will Dorji decide which drink it to be served to whom?

- A.7** She can decide by the use of indicator. If the sample of drink turns red litmus blue, it is basic. If it turns blue litmus red, it is acidic. If it does not affect litmus, it is neutral.

Q.8 Explain why:

- (i) An antacid tablet is taken when you suffer from acidity.
- (ii) Calamine solution is applied on the skin when ant bites.
- (iii) Factory waste is neutralized before disposing it into the water bodies.

- A.8** (i) Antacids are nothing but bases. When there is excess of acid in stomach antacid tablet neutralize the acids and relieve us.
- (ii) Ant injects an acid during bite which causes the burning sensation. Calamine solution is basic in nature. It neutralizes the acid and relieves from the pain
- (iii) Factory wastes contain both acidic and basic substances. These are harmful for the organisms living in water. So, these are should be neutralized before disposing.

Q.9 Three liquids are given to you. One is hydrochloric acid, another is sodium hydroxide and third is a sugar solution. How will you identify them? You have only turmeric.

- A.9** 1. Dip the turmeric indicator strip in each liquid.
2. The liquid in which the colour of turmeric indicator changes to reddish brown is basic in nature i.e. sodium hydroxide.
3. Since, we already identified sodium hydroxide. We will pour the sodium hydroxide in other two bottles.
4. The liquid which get warm after pouring the sodium hydroxide (base) in it is of hydrochloric acid as heat gets evolved in the neutralization process.
5. The last one which shows no effect is liquid of sugar solution.

Q.10 Blue litmus paper is dipped in a solution. It remains blue. What is the nature of the solution? Explain.

- A.10** The above solution could be a base or a neutral solution because blue litmus paper doesn't change its colour in the neutral as well as basic solution

Extra Questions:

Q.1 What is acid rain? Where do these acids come from? What is the effect of acid rain?

- A.1** 1. Rain water which dissolves the pollutants like carbon dioxide, nitrogen dioxide and sulphur dioxide, which are released into the air as pollutants and dissolve in rain drops to form carbonic acid, nitric acid and sulphuric acid is called acid rain.
2. Acid rain can cause damage to buildings, historical monuments, plants and animals

Q.2 Explain why pickles and jams should not be stored in metal containers?

- A.2** Pickles contain vinegar which has acetic acid while jam contains tartaric acid. If they are stored in metal containers, a chemical reaction will take place making the pickle and jam toxic and can cause harm to health.

Q.3 How does the soil become too acidic or basic? What treatment should be given to such soil?

- A.3** 1. Excessive use of fertilizer is the main cause to make the soil acidic, soil pollution, rainfall, also decides the pH of soil.

2. When the soil is too acidic, it is treated with bases like quick lime (calcium oxide) or slaked lime (calcium hydroxide).
3. If the soil is basic, organic matter is added to it. Organic matter releases acids which neutralises the basic nature of soil.

Q.4 Define the following:

1. **Indicators**: Indicators are the special type of substance used to test whether the given substance is acidic or basic
2. **Neutral**: Substance that are neither acidic nor basic are called neutral substances.

CHAPTER-6

PHYSICAL AND CHEMICAL CHANGES

Text Book Exercise

Q1 to Q3, Q.8, Q11 and Q 12 (Discussed and done in text book)

- Q.4** When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of change is it? Explain.
- A.4** When baking soda is mixed with lemon juice, the bubbles which are formed with the evolution of a gas is due to the evolution of carbon dioxide gas. Since, there is formation of a new substance in this reaction, it is a chemical change.
- Q.5** When candle burns, both physical and chemical changes take place. Identify these changes. Give another example of familiar process in which both the chemical and physical changes take place.
- A.5**
1. The wax of the candle first melt then vaporizes and burns.
 2. Melting of wax is a physical change since melted wax can be solidified back to the wax and there is not new substance is formed.
 3. When wax and wick of the candle burns, smoke and carbon dioxide is formed which are new substance. So, it is a chemical change.
 4. Cooking of food is both physical and chemical because raw vegetables get cooked which is a chemical change and the water changes into steam which is a physical change.
- Q.6** How would you show that setting of curd is a chemical change?
- A.6** The curd is formed from milk. Both curd and milk have different properties. Also, once the curd is formed it cannot be reversed back into milk. So, there is formation of new substance with different properties and also an irreversible process, setting of curd is a chemical change.
- Q.7** Explain why burning of wood and cutting it into small pieces are considered as two different types of changes.
- A.7** Burning of wood produces ash and smoke. Hence the properties of wood are changed and new substances are formed. So, it is a chemical change. When a log of wood is cut into small pieces, there is no new substance formed. Each small piece bears the properties of wood. So, it is a physical change. Obviously,
- Q.9** Explain how painting of an iron gate prevents it from rusting?

A.9 Painting of an iron gate prevents it from rusting because it cut the direct contact of iron from the environment and therefore there is no further exposure of iron to oxygen in moisture which is the causes for rusting.

Q.10 Explain why rusting of iron objects is faster in coastal areas than in deserts?

A.10 In coastal areas there is more moisture in air due to the presence of sea. But, in desert there is a scarcity of water and hence air is almost dry there. Both air and moisture are necessary conditions for rusting. So, rusting is faster is coastal areas than in desert.

Extra Questions:

Q.1 Define:

i)Galvanization

ii)Crystallisation

iii)Physical change

iv)Chemical change

A.1 i) Galvanization: The process in which a metal like chromium or zinc is deposited on the surface of iron articles by passing electric current is called galvanization.

ii)Crystallisation: Crystals of pure substances are obtained from their solution by a process called crystallisation.

iii)Physical change: The change in which a substance undergoes a change in its physical properties is called physical change. In this type of change no new substance is formed.

iv)Chemical change: When two or more substances react to produce one more new substance with a different set of properties is called chemical change

Q.2 Explain the following:

1. Lime water turns milky on passing carbon dioxide gas through it.

2.Bubbles are produced when acetic acid is added to a solution of sodium hydrogen Carbonate.

A.2 1. When carbon dioxide (CO₂) reacts with lime water [Ca(OH)₂], then calcium carbonate(CaCO₃) and water (H₂O) is formed.

Calcium hydroxide + Carbondioxide gas → Calcium Carbonate + Water

Calcium carbonate being insoluble white powder gives milky appearance to water.

2.When baking soda (NaHCO₃) is added to acetic acid (CH₃COOH) then carbon dioxide (CO₂) gas is formed which causes appearance of bubbles.

Acetic acid + Baking Sada → Carbondioxide gas + Other substance
(CH₃COOH) (NaHCO₃) (CO₂)

Q.3 Give an example of a chemical reaction for each of the following situations:

(i) A change in colour is observed.

(ii) A gas is evolved.

(iii) Sound is produced.

A.3 (i) A change in colour is observed: Chemical reaction between copper sulphate solution and iron metal.

In this reaction, blue colour of copper sulphate solution changes to light green colour due to the formation of iron sulphate.

(ii) A gas is evolved: When baking soda and vinegar are mixed together then a chemical change takes place and bubbles of carbon dioxide gas are formed along with some other substances.

(iii) Sound is produced: Explosion of a firework produces heat, light, sound and unpleasant gases. Explosion of firework is a chemical change.

Q.4 What is rust? Write the conditions necessary for rusting.

A.4 1. When iron objects are left exposed to moist air, a substance with a brown flaky layer is formed on surface of object. This brown layer is called rust.

2. Availability of both oxygen and water are the necessary conditions for rusting.

Q.5 Food items like apples if cut and exposed to air become brownish. Explain, why?

A.5 Food items like apples if cut and exposed to air become due to the oxidation of the essential nutrients present in it.

The exposed food undergoes a chemical change and also its food value decreases.

CHAPTER-8

WINDS, STORMS AND CYCLONES

Text Book Exercise

Q1. (Discussed and done in textbook)

Q2. Suggest two methods to find out wind direction at given place.

A. Two methods to find out wind direction at a given place are:

(i) Take some sand and release it from height. The direction in which the sand starts flowing is the direction of the wind.

(ii) Take an air balloon and releases it in the open space. The balloon will start moving in one direction which will gives an idea about the direction of the wind at that place.

Q3. State two experiences that made you think that air exerts pressure (other than given in the text)

A. (i) When we fill air in a balloon it inflates due to pressure exerted by air. Also, when it is overfilled with air it bursts due to excess air pressure.

(ii) When we hang a banner in a place of moving fast air, it tears due to the pressure exerted by the air.

Q4. You want to buy a house. Would you like to buy a house having windows but not ventilators? Explain answer.

A. Ventilators are important for the circulation of air. Warm air is lighter which rises up and exit from the ventilators. Cool air is heavier and thus move in through window making the room comfortable for living.

Q5. Explain, why holes are made in hanging banners and hoardings?

A. Holes are made in hanging banners and hoardings in order to tackle the air pressure. The air gets passed through these holes made on the hoardings or banners and thus it reduces the pressure of air on them. Therefore, the hoardings do not get blown away or torn due to air pressure.

Q6. How will you help your neighbours in case cyclone approaches your village/town?

A. We will help by following ways:

(i) By warning everyone about the coming danger.

(ii) Searching for shelter.

(iii) Keeping storage of water and food.

(iv) Setting up first aid facility.

Q7. What planning is required in advance to deal with the situation created by a Cyclone?

QA. (i) Setting up cyclone warning system.

(ii) Setting up cyclone shelter.

(iii) Setting up food and water storage.

(iv) Setting up first aid facility.

Q8 & Q9. (Discussed in class and done in textbook)

Extra Questions:

Q1. Define:

a. Thunderstorm

b. Cyclone

c. Tornado

d. Monsoon winds

A. **a. Thunderstorm:** The movement of falling water along with lightning, heavy rain and strong winds is called thunderstorm. Thunderstorm occurs frequently in hot and humid tropical area, such as India

b. Cyclone: A cyclone is a storm which develops on the sea and has high speed winds swirling around a low pressures centre called the eye of the storm

c. Tornado: A tornado is a violent storm with very strong circular winds over a small area

d. Monsoon winds: Periodic winds that carry winds and bring rain, and flow from ocean to land called monsoon winds.

Q2. Why is Chandigarh unlikely to be affected by a cyclone?

A. Chandigarh is unlikely to be affected by a cyclone because it is not near the sea or ocean

Q3. Name the ocean which is mainly responsible to bring rain bearing monsoon winds to Kerala coast in June every year.

A. Indian ocean is mainly responsible to bring rain bearing monsoon winds to Kerala coast in June every year.

Q4. To expel hot air out of the kitchen, A has an exhaust fan fitted on the window of her kitchen and B has a similar exhaust fan fitted on the wall near the ceiling of her kitchen.

Which of the exhaust fan will expel the hot air more effectively? Explain why?

A. B's exhaust fan will expel the hot air more effectively because hot air rises up and her fan is at greater height than A's.

Q5. Why is it advisable not to shut all the doors and windows during a storm?

A. During storms, heavy winds passing over the house creates a low pressure. The high pressure inside the house tries to fill the low pressure outside. Since, this pressure is stuck inside the house. Therefore, it pushes or lifts the roof off. So, unless the house is well ventilated, the roof is more likely to blow off in a strong wind.

Q6. A flat in Mumbai with a balcony facing the sea has some clothes hung on a clothes line in the balcony. Towards which direction, the clothes will be blown in the afternoon? Explain it

A. In the afternoon, the land gets heated faster than the water. The air over the land becomes hotter and rises up, creating a drop in pressure. This causes the winds to flow from the sea towards the land. Thus, the clothes will be blown towards the house because of sea breeze flowing towards the land.

Q7. When strong/high speed wind blows, an umbrella held upright at times gets upturned. Explain the reason.

A. High speed wind passing over the umbrella creates low pressure above the umbrella. Therefore, the pressure below the umbrella upturns it.

Q8. Suggest some precautions to be taken to prevent the roof of a tin sheet from flying away during a fierce wind storm.

A. Some precautions are:
i. Put heavy stones on it.
ii. Screw it tight.

CHAPTER-7

WEATHER, CLIMATE AND ADAPTATIONS OF ANIMALS TO CLIMATE

Text book Exercise

Q3 to Q6, Q10, Q11, Q12(Discussed and done in text book)

Q1. Name the elements that determine the weather of a place.

A. The elements that determine the weather of a place are temperature, humidity, rainfall, wind-speed, latitude, altitude and nearness to sea.

Q2. When are the maximum and minimum temperatures likely to occur during day?

A. The maximum temperature of the day occurs in the afternoon while the minimum temperature occurs generally in the early morning,

Q7. The tropical rain forest has large population of animals. Explain.

A. 1. The tropical rainforest has a large population of animals due to favourable climatic conditions and easy availability of different kinds of foods.
2. The regions is hot and humid with ample rainfall which supports the growth of animals and plants.

Q8. Explain, with examples, why we find animals of certain kind living in particular climatic condition?

A. 1. The organisms interact with the environment to survive. So, it is necessary for the organisms to have characteristics that suits the environment.
2. Polar bears have white fur so that they are not easily visible in the snowy background.
3. It protects them from their predators. It also helps them in catching prey.
4. The thick layer of fur and fat deposit inside the skin insulate them to survive in cold climate.
5. On warm days for keeping their body cool polar bear goes for swimming.
6. It is a good swimmer. Its paws are wide and large, which help not only to swim well but also walk with ease in the snow.

Q9. How do elephant living in the tropical rainforest adapt itself?

A. The elephant has adapted to the conditions of rainforests in many ways.
1. It uses the trunk as nose because of which it has as strong sense of smell. The trunk is also used by it for picking up food.
2. Moreover, its tusks are modified teeth. These can tear the bark of trees that

elephant love to eat.

So, elephant is able to handle the competition for food rather well.

3. Large ears of elephant help it to hear even soft sounds. They also help the elephant to keep cool in the hot humid climate of the rain forest.

Extra Questions :

Q1. Mention few characteristics which make the Penguin a good swimmer.

A. Penguins have streamlined body, flipper-like wings and webbed feet which make them good swimmers. This also helps in catching their prey (fish).

Q2. Why is it difficult to predict the weather of a place, while it is easy to predict its climate?

A. Weather is the day-to-day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall, etc. It is a complex phenomenon which can vary over a short period of time and thus, it is difficult to predict the weather of a place. On the contrary, it is easier to predict climate as it is the average weather pattern taken for a long time.

Q3. Differentiate between:

1.Weather and climate

2.Humidity and rainfall

3.Climates of polar region and tropical rainforest

A

1.	WEATHER	CLIMATE
1.	Weather is the day-to-day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall and wind speed etc.	Climate is the average weather pattern of a place.
2.	HUMIDITY	RAINFALL
	Humidity indicates the wetness of a place due to the presence of moisture in the atmosphere.	Rainfall is the drops of water that falls from clouds on the ground.
3.	CLIMATE OF POLAR REGION	CLIMATE OF TROPICAL RAIN FOREST
	Polar region remains very cold for most part of the year	Tropical rainforest is hot and humid.

Q4. Why do birds in cold climate migrate to warmer regions in winter?

A. Birds in cold climate migrate to warmer regions in winter because birds must remain to warm to survive.

Q5. Name various instruments used for measuring different weather elements.

- A.**
- i. Maximum and minimum thermometer- To measure maximum and minimum temperature.
 - ii. Rain gauge- To measure rainfall.
 - iii. Hygrometer- To measure humidity.
 - iv. Anemometer- To measure wind speed

Q6. Write some adaptations of animals living in tropical rain forests.

- A.** Some adaptations of animals living in tropical rain forests such as living on trees, development of strong tails, long and large beaks, bright colours, sharp patterns, loud voice, diet of fruits, sensitive hearing, sharp eyesight, thick skin, ability to camouflage in order to protect themselves from predators.

Q7. Why do many fish and insects also migrate?

- A.** Many types of fish (salmon and anadromous) and insects(butterfly) also migrate seasonally in search of more hospitable climate (encourages the existence of development)

CHAPTER-4

HEAT

Text book Exercise

Q2, Q3, Q4, Q8 to Q11 (To be discussed and done in textbook)

Q1. State similarities and differences between the laboratory thermometer and the clinical thermometer.

A.1 Similarities:

1. Both made of glass and consist of a long narrow tube made up of glass.
2. Both of them have a bulb at one end.
3. Both the meters give readings with the mercury that is inside the thermometer.
4. Celcius scale is present in both the thermometer.

Dissimilarities:

S.no	CLINICAL THERMOMETER	LABORATRY THERMOMETER
1.	Range of clinical thermometer is from 35°C to 42°C.	Range of laboratory thermometer is from -10°C to 110°C
2.	Clinical thermometer is used to take the temperature of human body.	Laboratory thermometer is used to take the reading of temperature in laboratory
3.	In case of clinical thermometer, mercury level falls when removed from the mouth due to presence of kink.	Mercury level falls when removed from the source in case of laboratory thermometer.

Q.5 Discuss why wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing?

A We wear more layers of clothing during winter to keeps us warmer than wearing just one thick piece of clothing because air gets trapped in between the two or more layers of clothing. This air prevents the flow of heat from our body to the cold surroundings as air is bad conductor of heat.

Q7. In places of hot climate, it is advised that the outer walls of houses be painted white. Explain.

A. In places of hot climate, it is advised that the outer walls of houses be painted white because white colour absorbs least heat. It reflects most of the heat and hence keeps the house cooler.

Extra Questions:

Q.1 Shopkeeper selling the ice blocks usually cover them with the jute sacks. Explain why?

A.1 1. Since, a jute sack is a thermal insulator, therefore, it helps ice not to melt immediately.
2. So, shopkeepers must use insulating materials like sack, saw dust, newspaper etc, to cover the ice.

Q2. In a mercury thermometer, the level of mercury rises when its bulb comes in contact with a hot object. What is the reason for this rise in the level of mercury?

A.2 As the temperature increases, expansion of mercury takes place in the capillary tube which leads to the rise in the level of mercury in thermometer.

Q.3 For setting curd, a small amount of curd is added to warm milk. The microbes present in the curd help in setting if the temperature of the mixture remains approximately between 35°C to 40°C. At places where room temperature remains much below the range, setting of curd becomes difficult. Suggest a way to set curd in such a situation.

A.3 For the setting of curd at places where temperature is below room temperature, the container in which curd is to be made, must be kept in a thermally insulated cover or it can be wrapped either by a woollen material or a jute sack so that temperature is maintained for the setting of curd. The container can also be kept in the sun or near the gas stove while cooking food for the setting of curd.

Q.4 You may have noticed that a few sharp jerks are given to clinical thermometer before using it. Why is it done so?

A.4 Jerks are given to clinical thermometer before using it to settle down the mercury level below normal temperature so that the measurement of temperature of a body can be taken accurately.

Q.5 It is advised not to hold the thermometer by its bulb while reading it. Explain, why?

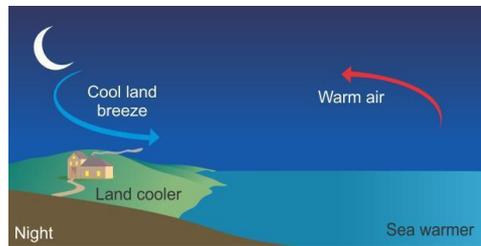
A.5 We are advised not to hold the thermometer bulb while reading it, as the level of mercury increases from the actual reading due to our body temperature.

Q.6 While constructing a house in a coastal area, in which direction should the windows preferably face and why?

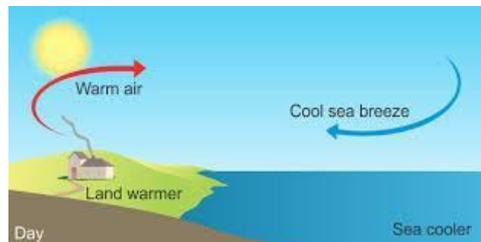
A.6 Windows should preferably face towards the sea beach because the sea breeze coming from sea keeps the house cool during the day time.

Q.7 Explain land breeze and sea breeze with relevant diagram.

A.7 Land breeze-Cold breeze that flows from land surface to sea surface in summer nights.



Sea breeze- Cold breeze that flows from sea surface to land surface in summer day.



Q.8 List one application each of conduction, convection and radiation.

A.8 Conduction is applicable to transfer heat from hotter end to cooler end of a solid object, like steel spoon become hot when left in cooking pan for a longer time.

Land breeze and sea breeze are based on convection current.

Sun light reaches to us due to radiation.

Q.9 Why is it advisable to take umbrella while going out in the summer afternoon?

A.9 This is because in summer afternoon the temperature is quite high. The sun rays contain certain harmful radiations like UV, which are harmful to our skin. Using an umbrella reduces the risk of direct skin contact to sunlight and from the effect of harmful ultraviolet rays.

CHAPTER-3

FIBRE TO FABRIC

Text book Exercise

Q1 to Q3 and Q.5 to 9(Discussed and done in textbook)

Q.4 What is meant by the following terms?

(i) Rearing (ii) Shearing (iii) Sericulture

- A.4**
- i) Rearing:** It means taking care of herds of animals which includes feeding, grazing, breeding, etc. for economical purpose like meat and other useful products.
 - ii) Shearing:** The removal of fleece of the sheep along with a thin layer of skin from its body is called shearing.
 - iii) Sericulture:** Rearing silkworm for the production of silk economically is called sericulture.

Extra Questions:

Q.1 How do the hair of certain animals help in keeping their bodies warm?

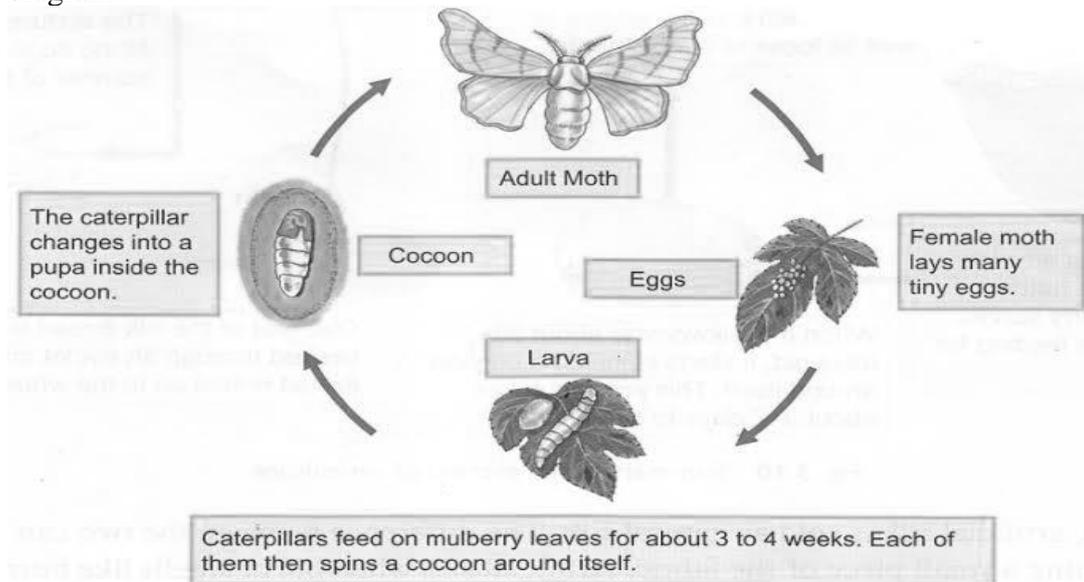
- A.1**
1. Hair (or wool) of these animals trap a lot of air.
 2. Air is a poor conductor of heat.
 3. So, the air trapped in hair (or wool) of these animals prevents their body heat to escape in the surroundings and keeps them warm.

Q.2 Write various steps for processing fibres into wool.

- A.2**
- (i) Shearing:** The first step is to remove fleece of the sheep along with thin layer of skin. This process is called shearing.
 - (ii) Scouring:** In this step, the sheared hair is washed thoroughly to remove grease, dust and dirt.
 - (iii) Sorting:** In this step, different textures of hair are separated or sorted.
 - (iv) Separating burrs (small fluffy fibres) from the hair.**
 - (v) Dyeing:** The fibres are dyed in various colours, as the original colours of fleece are usually black, white or brown.
 - (vi) Rolling:** In this process, the fibres are straightened, combed and rolled into yarn. And the fibres now as wool are ready to be woven.

Q.3 Describe the life history of silk moth with the help of figures of various stages.

A.3 Life cycle of silk moth is completed in four main stages as depicted below in the diagram



- i) The female silk moth lays eggs on the leaves of a mulberry tree.
- ii) The eggs hatch to form larvae called 'caterpillar' or 'silkworm'.
- iii) The silkworms grow in size feeding on mulberry leaves and when the caterpillar is ready to enter the next stage of its life history called pupa.
- iv) It first weaves a covering to hold itself, which is known as cocoon.
- v) Pupa develop inside cocoon into moth and comes out as an adult male or female silk moth.

Q.4 Write occupational hazard associated with sorter's job.

A.4 Sorter's job is risky as sometimes they get infected by a bacterium anthrax, which causes a fatal blood disease called sorter's disease.

Q.5 What do you mean by term selective breeding?

A.5 The process of selecting parents for obtaining special characters in their off springs is termed as selective breeding.

Q.6 Does shearing hurt the sheep?

A.6 Shearing does not hurt the sheep because the upper most layer of skin is dead. Also the hair of sheep grows again as just our hair does.

Q.7 Why caterpillars need to shed their skin when they grow bigger?

A.7 The caterpillars eat their own shed skin during their growing stage and have no other food option. So they need to shed their skin when they grow bigger enter the next stage of its life history called pupa.

Q.8 Why a cotton garment cannot keep us as warm in winter as a woollen sweater does?

A.8 Cotton clothes are thin and do not have spaces in their fabrics through which air can be trapped, to keep us warm thus Cotton clothes do not prevents heat coming out of our body.

CHAPTER-1

NUTRITION IN PLANTS

Date Slot:

No. of Periods: 07

Text Book Exercise

Q.1 Why do organisms need to take food?

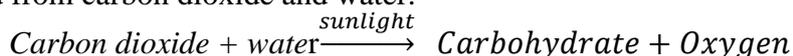
- A.1** Organism needs food to:
- (i) get energy to do work.
 - (ii) build body.
 - (iii) repair damage in the body.
 - (iv) maintain the functions of the body.

Q.2 Distinguish between a parasite and saprophyte.

Parasite	Saprophyte
The organisms that grows on the body of another organisms and derives nutrients from it is called parasite.	The organisms that derives nutrients from dead and decayed organic matter are called saprophytes.
They directly feed on living organisms for their nutrition.	They only can feed on dead and decayed matter.
They take the readymade food from host	They take the decayed and digested food

Q.4 Give the brief description of photosynthesis of food in green plants.

1. Photosynthesis is the process of synthesis of food in plants with the help of chlorophyll and carbon dioxide in the presence of sun light.
2. Water and minerals present in the soil are absorbed by the roots and transported to the leaves through vessels.
3. Carbon dioxide is taken through stomata present on leaves. Leaves capture the energy of sunlight with the help of chlorophyll. This energy is used to synthesize food from carbon dioxide and water.

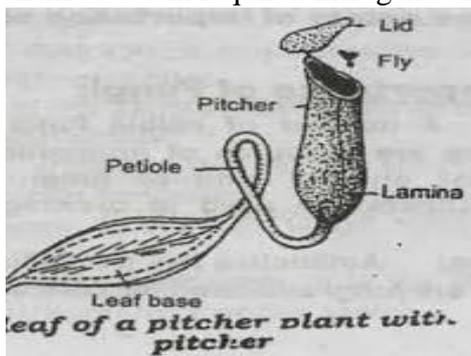


Q.3, Q5 to Q12(discussed and marked in textbook)

Assignment Questions

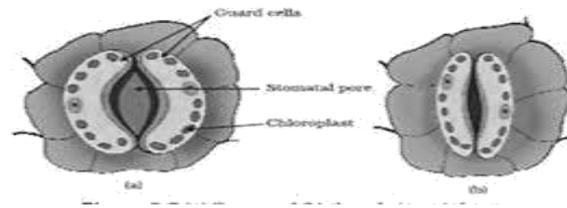
Q.1 Why does pitcher plant trap insects?

- A.1** Pitcher plant is an insectivorous plant grows only in soil which does not has sufficient nitrogen. These plants trap insects by various methods, kill them and digest them to obtain required nitrogen compounds for their growth.



Q.2 When we observe the lower surface of leaf through a magnifying lens, we see numerous small openings. What are they called? Explain their structure with diagram.

A.2 Stomata are the numerous small openings present on lower surface of leaf. Each stoma is surrounded by a pair of guard cells. These stomata help in exchange of gases (carbon dioxide goes in and oxygen is released) and in transpiration.



Open stomata

close stomata

Q.3 A goat eats away all the leaves of small balsam plant. However, in few days new leaves could be seen sprouting in the plant again. How did the plant survive without leaves?

A.3 The balsam plant survived on the food stored in roots and stem. It might have undergone gaseous exchange through lenticels on the stem.

Q.4 Nitrogen is an essential nutrient for plant growth. But farmers who cultivate pulses as crops like green gram, Bengal gram and black gram etc. do not apply nitrogenous fertilizer during cultivation. Why?

A.4 Plants such as pulses, peas, gram are called leguminous plants. These plants have root nodules in them, which have a symbiotic relation with bacteria such as Rhizobium.

These bacteria convert gaseous nitrogen of air into water soluble nitrogen compound like nitrates.

Some of these nitrogen compounds are used by the leguminous plants for their growth.

Hence farmers do not need to apply nitrogenous fertilizer in field during cultivation.

Q.5 Wheat dough if left in the open, after a few days, it starts to emit a foul smell and becomes unfit for use. Give reason.

A.5 Carbohydrate in wheat dough encourages the growth of yeast and other saprophytic fungi. They break down carbohydrate into simpler compounds like carbon dioxide and alcohol, which leads to a foul smell.

Q.6 Define various modes of nutrition in plants.

A.6 Various modes of nutrition in plants are-

1. Autotrophic mode of nutrition- plants can synthesise their own food by the process of photosynthesis

2. Heterotrophic mode of nutrition- The plants which cannot synthesise their food but depend upon other organisms for their nutrition and called heterotrophic plants.

3. Heterotrophic plants can be further classified into parasites, saprophytes, insectivorous and symbiotic plants.

CHAPTER-2

NUTRITION IN ANIMALS

Date Slot:

No. of Periods: 07

Text Book Exercise

Q.1 to Q.4 (Discussed and done in text book)

Q.5 What are villi? What is their location and function?

A.5 Villi are located in the small intestine. The inner wall of the small intestine has thousands of finger-like outgrowths called villi. The villi increase the surface area for absorption of the digested food. Each villus has a network of thin and small blood capillaries. Which absorb nutritive components from digested food and supply to each cell of the body through blood.

Q.6 Where is the bile produced? Which component of the food does it digest?

A.6 Bile is produced in liver and stored in gall bladder. Bile juice digests fat (partially) and convert it in to fatty acid.

Q.7 Name the type of carbohydrate that can be digested by ruminants but not by humans. Give the reason also.

A.7 Cellulose is a type of carbohydrate that can be digested by ruminants and not by humans. Ruminants have a large saclike structure called Caecun between the small intestine and large intestine The cellulose of the food is digested here by the action of certain bacteria which are not present in humans.

Q.8 Why do we get instant energy from glucose?

A.8 Glucose is the simplest form of carbohydrate which can be broken easily to give energy. So we get instant energy from glucose.

Q.10 Write one similarity and one difference between the nutrition in amoeba and human beings.

A.10 Similarity: Both Amoeba and human have holozoic type of nutrition.
Difference: Human beings have complex structure for the ingestion, digestion and egestion of food while Amoeba has simple process in which it engulfs with the help of pseudopodia and food get trapped in food vacuoles.

Q.9, Q11 and Q12(discussed and done in textbook)

Q.13 Can we survive only on raw, leafy vegetables/grass? Discuss.

A.13 No, because to live alive a healthy life we need a complete balance of all nutrients. Raw green vegetables may have cellulose which cannot be digested by us. So, only green leafy vegetables will not solve the purpose

Assignment Questions

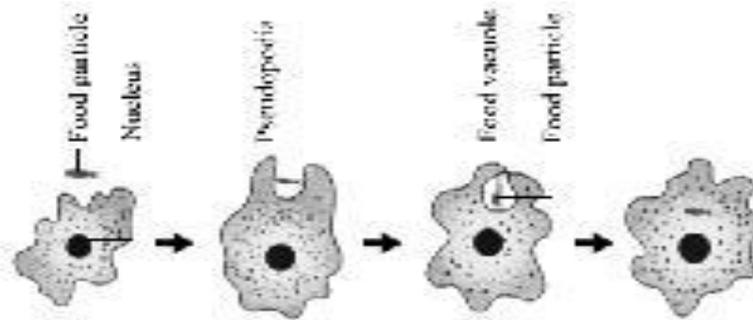
Q.1 Ruminants such as cows and buffaloes swallow their food hurriedly and then sit restfully and chew their food. Can you give reason why?

A.1

- 1.Ruminants such as cows and buffaloes swallow their food hurriedly and store it in a part of the stomach called rumen.
- 2.This partially chewed food is called cud.
- 3.Later, this partially digested food (cud) is returned to the buccal cavity of the animals in small lumps and animal chews it sitting restfully to complete the process of digestion. This process is called rumination.
- 4.The thoroughly chewed cud is swallowed again to other compartment of stomach and then into small intestine for complete digestion and absorption.

Q.2 How does amoeba procure its food?

A.2 Amoeba is a microscopic single celled organism mainly found in pond water. It has an irregular shape. Its food consists of microscopic organisms. On sensing food Amoeba gives out pseudopodia which surrounds the food particle, forms a food vacuole and ultimately take the food particle inside the body.



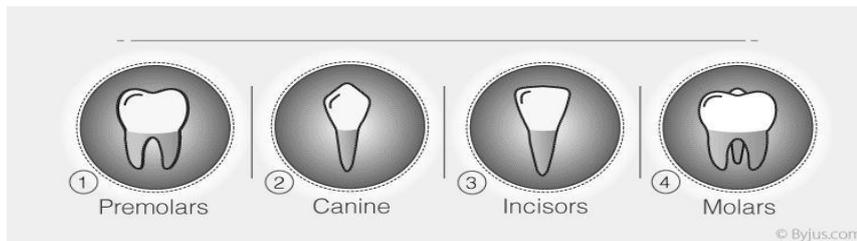
Q.3 How digestion in grass eating animals (Ruminants) is different from humans?

A.3

S. N.	Ruminants	Humans
1.	Stomach of grass eating animals is divided in to four chambers 1. Rumen 2. Reticulum 3.Omasum 4 Abomasum	Human stomach is a single sac like structure
2.	Cud is brought back to mouth for rumination.	Chyme is not brought back to mouth for re-chewing.
3.	Ruminants can digest cellulose.	Humans cannot digest cellulose

Q.4 Define different types of human teeth with their diagram

A.4



Different types of teeth are

1. Incisors 2. Canines 3. Premolars 4. Molar

1. Incisors are also called biting teeth, helps in bite the food. They are total 8 in number

2. Canines help in tearing and piercing the food, they are total 4 in number and present on either side of incisors.

3. Premolars are total 8 in number and present on either side of canines. They help in chewing and grinding the food.

4. Molars are total 12 in number and present on either side of premolars. They also help in chewing and grinding the food.

CHAPTER-10

RESPIRATION IN ORGANISMS

TEXT BOOK EXERCISE

Q1. Why does an athlete breathe faster and deeper than usual after finishing the race?

- A.**
1. During running the athlete uses up lot of energy.
 2. So, she/he needs more oxygen and it can be obtained by speeding up oxidation of food.
 3. This requires more oxygen to be supplied.
 4. This is the reason behind fast and deep breathing of athlete after finishing the race.

Q2. List the similarities and differences between aerobic and anaerobic respiration.

A. Similarities-

- (i) Energy is released.
- (ii) Both takes place in the cells of the organism.

Dissimilarities:

AEROBIC RESPIRATION	ANAEROBIC RESPIRATION
Aerobic respiration takes place in presence of oxygen.	Anaerobic respiration takes place in absence of oxygen.
Glucose is completely broken down in aerobic respiration.	In anaerobic respiration incomplete oxidation of glucose occurs.
In aerobic respiration large amount of energy is released.	In anaerobic respiration small amount of energy is released.
Carbon dioxide and water are the end products of aerobic respiration.	End products can be carbon dioxide and alcohol (yeast) or lactic acid in muscles (in human while heavy exercise)
It is a slow process, takes more time to release energy.	It is a faster process, takes less time to release energy.

Q3. Why do we often sneeze when we inhale a lot of dust-laden air?

- A. The air around us has various types of unwanted particles, such as smoke, dust, pollen etc. When we inhale; the particles get trapped in the hair present in our nasal cavity. Sometimes these particles enter the nasal cavity and create irritation in sensory lining of nasal cavity that leads to sneezing

Q4 to Q10 (to be discussed and done in textbook)

EXTRA QUESTIONS

Q1. DEFINITIONS:

- a. **Diaphragm:** A dome-shaped muscular partition separating the thorax from the abdomen in mammals. It plays a major role in breathing,
Cellular respiration: The process in which food molecules are broken down in to simpler molecules within the cells and releasing energy is called cellular respiration.
- b. **Breathing rate:** The number of times a person breathes in a minute is termed as breathing rate.
- c. breathing rate.

Q2. Why human breathing mechanism is called tidal breathing?

- A. Human breathing mechanism is called tidal breathing because air comes in and goes out through the same path.

Q3. Why do we get muscle cramps after heavy exercise?

- A. 1. During heavy exercise the demand for energy is high.
2. But the supply of oxygen to produce energy is limited.
3. Due to this anaerobic respiration takes place in the muscle cells to fulfil the demand of energy.
4. The cramps occur only when the muscle cells respire anaerobically.
5. The partial breakdown of glucose produces lactic acid.
6. The accumulation of lactic acid causes muscle cramps.

Q4. Write short note on gills.

- A. Gills in fish help them to use oxygen dissolved in water and thus help them in breathing.

Gills are projections of their skin.

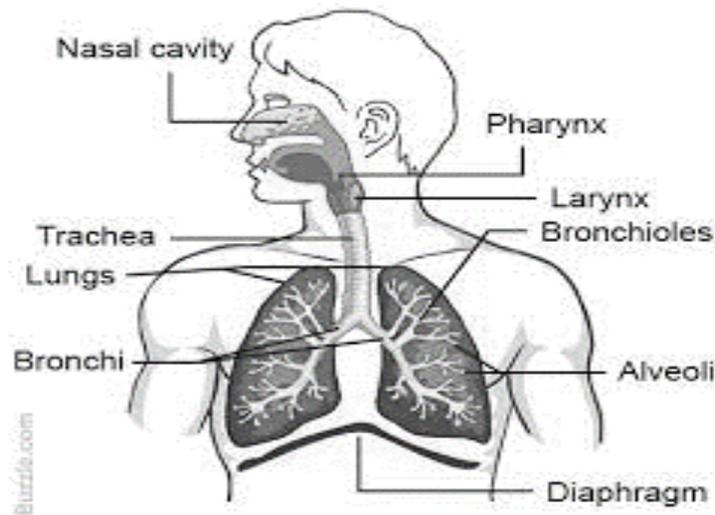
These are well supplied with blood vessels for exchange of gases.

Q5. How does respiration occur in plants?

- A. In plants the roots take in air present in soil and respire, woody stem have lenticels for exchange of gases and leaves have tiny pores called stomata that help in exchange of gases. The breakdown of glucose in the plant cells is similar to that in other living beings.

Q6. Draw a labelled diagram of respiratory system in human beings.

A.



Q7. Why do we yawn when we are sleepy or drowsy?

A.

1. When we are sleepy or drowsy, we yawn because our brain cells lack sufficient amount of oxygen.
2. The deep breath associated with yawning help us to draw in more oxygen and supply the sufficient amount of oxygen to the tired body organs and brain.

Q8. What is the importance of breathing?

A.

Breathing is important for two reasons:

- (i) It supplies oxygen to our various organs, which is vital for our survival.
- (ii) With our breathing, we also get rid of waste products and toxins from our body.

Q9. Define anaerobes. How do they get energy?

A.

1. Anaerobe is any organism that does not require oxygen for respiration. It may react negatively or even die if free oxygen is present.
 2. Some anaerobes get energy by fermentation and some of them by anaerobic respiration.
-

CHAPTER-11

TRANSPORTATION IN ANIMALS AND PLANTS

TEXT BOOK EXERCISE

Q1 to Q3 (discussed and done in text book)

Q4. Why is transport of materials necessary in a plant or in an animal? Explain.

A. In plants and animals, the transport of materials is necessary because:

(i) Animals need to transport food and water from one organ to another and oxygen from lungs to all other body parts.

(ii) Animals need to transport the wastes from where they are produced to parts from where they can be removed

(iii) Plants need to transport the food from leaves and water and minerals from roots to all other parts of the plant.

Q5. What will happen if there are no platelets in the blood?

A Platelets help in the clotting of blood at the time of injury with bleeding.

If there are no platelets, then there would be no clotting of blood and ultimately the person may die due to excess of flow/loss of blood.

Q6. What are stomata? Give two functions of stomata.

A. Small pores in leaves of plant are called stomata.

Functions of stomata-

(i) Exchange of carbon dioxide and oxygen.

(ii) Transpiration to remove excess of water.

Q7. Does transpiration serve any useful function in the plants? Explain.

A (i) The excess water absorbed by the root system of the plants lost is in the form of water vapour to their surroundings by the process of transpiration.

(ii) It also helps in transport of absorbed water to the leaves of plants from the roots for photosynthesis and helping the plants keeping erect.

(iii) It also produces cooling effect for the plants.

Q8. What are the components of blood?

A. The main components of blood are:

Red blood cells (RBC), white blood cells (WBC), platelets and plasma.

Q9. Why blood is needed by all the parts of a body?

A. Blood is needed by all the parts of a body because:

- (i) It carries oxygen to all the parts of the body and also carries carbon dioxide back to the lungs.
- (ii) It carries digested food to various parts of the body for absorption.
- (iii) It helps in maintaining constant body temperature.
- (iv) It transports hormones to their target site and also helps in fighting with germs and bacteria.

Q10. What makes the blood look red?

A. The presence of red pigment called haemoglobin makes blood red.

Q11. Describe the functions of the heart.

A. Functions of the heart:

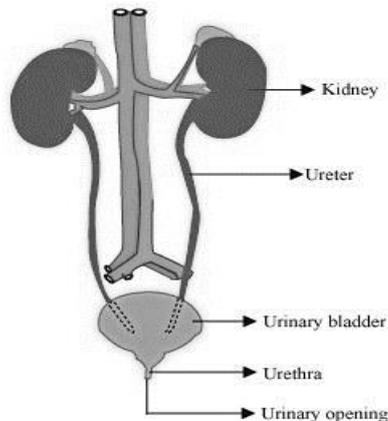
- (i) It helps in the circulation of oxygen rich blood throughout the body.
- (ii) It receives oxygenated blood from the lungs.
- iii) It also pumps back the blood carrying carbon dioxide to the lungs.

Q12. Why is it necessary to excrete waste products?

A. The waste products produced in various metabolic processes in our body are harmful for the body. So, it is necessary to excrete it.

Q13. Draw a diagram of the human excretory system and label the various parts.

A.



EXTRA QUESTIONS

Q1. Definitions:

- 1. Blood** is a red coloured fluid which flows inside the blood vessels. It consists a liquid part called the plasma and number of blood cells.
- 2. Dialysis**-The method of separating toxic substances from the blood when the kidneys are unable to do so. It is done by a machine called artificial machine.
- 3. Heartbeat**-The contraction and relaxation of different chambers of heart produces a thumping sound. This sound is heartbeat. One heartbeat indicates one cycle of pumping action by all the four chambers.

4. Excretion- The removal of waste materials produced in the cells of the living organisms is called excretion.

Q2. State the difference between arteries and veins.

A.

Arteries	Veins
1. They carry oxygenated blood from the heart to all parts of the body.	1. They carry deoxygenated blood from all parts of the body back to heart.
2. They have thick elastic walls.	2. They have thin walls.
3. They do not have valves.	3. They have valves which prevent the blood from flowing backwards.
4. Pulmonary artery is an exception which carries deoxygenated blood from the heart to lungs.	4. Pulmonary vein is an exception which carries oxygenated blood from the lungs to the heart.

Q3. Write a short note on blood cells.

A.

There are two main kinds of blood cells in the human blood, red blood cells and white blood cells.

a. Red blood cells (RBCs)- They contain a pigment called haemoglobin. This binds with oxygen and is mainly responsible for the transportation of oxygen in the body.

b. White blood cells (WBCs)- WBCs engulf foreign particles and harmful microbes. Thus, WBCs help in fighting diseases and form the immune system of the body.

c. Platelets- Platelets help in the clotting of blood in the case of cut or wound.

Q4. Give the composition of urine formed in human.

A.

1. Urine is an aqueous solution of greater than 95% water and 5% other constituents include urea, uric acid and other inorganic and organic compounds.

2. Urea is a non-toxic molecule made of toxic ammonia and carbon dioxide.
