



CLASS 6 - SCIENCE

CLASS : 6 1 st MID TERM PORTIONS AND PATTERNS		
MEASUREMENT	MATTER	MICROORGANISMS
I. Choose the correct answer		5 x 1 = 5
II. Fill in the blanks		6 x 1 = 6
III. Match the following		5 x 1 = 5
IV. Answer the following (pick out, spot the error, complete the table, diagrams, problems, q & a)		12 x 1 = 24
V. Answer the detail		2 x 5 = 10
		Total = 50

CLASS : 6 2 nd MID TERM PORTIONS AND PATTERNS		
HEAT	CHANGES AROUND US	STRUCTURAL ORGANISATION OF A CELL
I. Fill in the blanks		10 x 1 = 10
II. Answer the following		15 x 2 = 30
a. Pick the odd one out		
b. True or false and correct, if false		
c. Match the following		
d. Who am I?		
e. Complete the table		
f. Q / A		
III. Answer in detail		2 x 5 = 10
		Total = 50

CLASS : 6 3 rd MID TERM PORTIONS AND PATTERNS		
MAGNETISM	WATER	ECONOMIC BIOLOGY
I. Choose the correct answer		10 x 1 = 10
II. Answer the following (any 7) (match the following; true or false; pick out the add one and give reason; analogy questions; assertion and reasoning; spot the error and correct the mistakes; short answers)		7 x 2 = 14
III. Answer the following in brief (any 4)		4 x 4 = 16
IV. Answer the detail		2 x 5 = 10
		Total = 50



Class: 6 KEY ANSWERS ANNUAL

Chapter 1 MEASUREMENTS

EVALUATION:

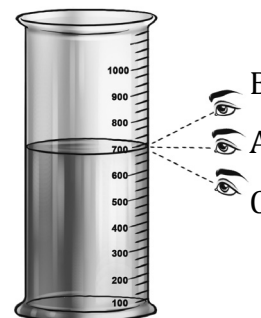
- I. 1. d 2. d 3. a 4. b 5. d
- II. 1. dozen 2. kg 3. g
4. minutes 5. mm
- III. 1. km: It is the unit to measure distance, others measure time.
2. Beam balance – measures weight; others are used to measure time.
3. 1 km : all others are equal.
4. Cubit: It is a non standard unit. Others are standard units.
5. Duration of paddy crop – is in months. Others durations are in hours.
- IV. 1. 1971 2. $\left(\frac{300}{60}\right)$ min = 5 min
3. $\left(\frac{5}{100}\right)$ m = 0.05 m 4. Mass 5. Time
- V. 1. Measurement is the determination of dimensions, quantity and capacity of a given item.
2. A unit is a fixed quantity used as a standard of measurement of a physical quantity like length, mass and time.
3. Length is the distance from one point to another.
Mass is the amount of matter present in a body.
Time is the interval between two events.
4. m, kg, s
5. Units which are bigger than standard SI unit are called multiple units e.g. 1 km = 1000m

Those units which are smaller than standard SI unit are called submultiple units. e.g. 1cm = 1/100 m

6. a. Foot pound second
b. centimetre gram second
c. metre kilogram second
d. Système International d'unités
7. a. (2×1000) m = 2000 m.
b. (3×60) min = 180 minutes
c. $(1500/1000)$ km = 1.5km
d. $(500/1000)$ kg = 0.5kg
8. a. years b. months c. cm
d. m e. kg
f. varies from student to student
g. minutes h. hours

VI.

1. A 2. zero 3. less 4. more
Teacher should demonstrate in class how to measure the water level reading. Try to bring in a measuring jar where meniscus formation is not very obvious. If it is obvious, please do explain the importance of meniscus formation and the role it has when a measurement is done. Explain through observation, at which eye position will the reading be less and more based on the given illustration.



Chapter 2 MOTION

EVALUATION:

- I.** 1. Linear 2. Circular
3. Rotatory 4. Rotatory
5. Random 6. Rotation
7. Rotation 8. Revolution
9. Translatory
- II.** 1. Non-uniform 2. Non-uniform
3. Uniform 4. Non-uniform
- III.** 1. Vibratory motion
2. Random motion
3. Rotatory motion
4. Oscillatory motion
5. Circular motion
- IV.** 1. Translatory/linear
2. Rotatory
3. 20 m
- V.** 1. False. Exhibits revolutionary and rotatory motion. It is also periodic motion.
2. False. It is revolution.
3. True
- VI.** 1. When the position of a body changes with respect to its surroundings and time, then it is said to be in motion.
2. Motion of pulley, motion of earth around sun.
3. In Oscillatory motion entire body moves to & fro from mean position e.g., pendulum in pendulum clock, swing
In vibratory motion some parts of the body move to and fro while other parts are at rest.

e.g. motion in tuning fork motion of string in veena, guitar, etc.

4. It is non-uniform motion. The speed of taxi changes depending on traffic and traffic signals.
5. Refer page 19 and answer in own words.

VII.1. a. Distance = 3 km

Time taken = 30 min

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{3 \text{ km}}{30 \text{ min}} \\ = \frac{(3 \times 1000) \text{ m}}{(30 \times 60) \text{ s}} = \frac{5}{3} \text{ m/s} (=1.66 \text{ m/s})$$

b. Speed = 8 km/h

Distance = 3 km

$$\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{3 \text{ km}}{8 \text{ km/h}} \\ = \frac{(3 \times 1000) \text{ m}}{(8 \times \frac{5}{18}) \text{ m/s}} = 1350 \text{ s} (=22.5 \text{ min})$$

2. Uphill

Speed = 30 km/h

Time taken = 10 min

$$\text{Distance} = 30 \frac{\text{km}}{\text{h}} \times 10 \text{ min} \\ = 30 \frac{\text{km}}{\text{h}} \times \left(\frac{10}{60}\right) \text{ h} = 5 \text{ km.}$$

(Do the calculation in km/h because the second part of the question includes speed in km/h)

Downhill

Speed = 60 km/h

$$\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{5 \text{ km}}{60 \text{ km/h}} \\ = \frac{1}{12} \text{ h} \left(= \frac{1}{12} \times 60 \text{ min} = 5 \text{ min}\right)$$

(Students should answer the second part directly, because distance covered is the same but the speed is doubled. So it will take only half time to cover downhill)

Chapter 3 HEAT

EVALUATION:

I. Who am I?

1. Clinical thermometer
2. Mercury
3. Sun
4. Kelvin

II. Identify whether the following are true or false; correct if it is false:

1. false - more in liquids
2. false - increases
3. false - 98.4°F
4. true
5. false - heat and light

III. Choose the correct answer:

- | | |
|--------------|-----------------------|
| 1. silver | 4. gas, liquid, solid |
| 2. all | 5. calorie |
| 3. hot, cold | |

IV. Complete the following:

- | | |
|---------------|--------------------|
| 1. nichrome | 4. liquid |
| 2. combustion | 5. thermal imaging |
| 3. more | |

V. Answer the following questions

1. One form of energy
2. Temperature is a measure of degree of hotness or coldness of a body
3.
 - It is a natural source of Vitamin D.
 - It helps plants prepare food.
 - It provides a heat and light.
 - It is an essential part of water cycle.
4. To accommodate for expansion during summer.

5. Metal rims are heated so that it expands and then it is fixed over the wheel. Then it is cooled so that it has a tight fitting.
6. Those which allow heat energy to pass through them. Eg: copper, silver
7. Thermostats are fixed to heating devices to keep a constant temperature. They undergo thermal expansion and break the circuit if the required temperature is reached. This prevents overheating and hence conserve energy.
8. Yes. Friction produces heat energy.
9.
 - a) From cup to body
 - b) From air particles to body
 - c) From body to air

VI. Match the following:

1. (e) Joule
2. (c) No heat transfer
3. (d) hot to cold
4. (b) Kelvin
5. (a) cracking of walls in summer

VII. H.O.T.S:

1. They contain a thermostat which expands and cuts off the circuit at the present temperature.
2. Bakelite is used as it is non-conductor of heat.
3. Glass is poor conductor of heat; Hence expansion on the inner and outer sides will be uneven.
4. Cotton absorbs sweat and keeps us cool during summer. Wool and silk are bad conductors and hence hold our body heat, thereby keeping us warm.
5. Running hot water on a tight lid of a jar will loosen it due to thermal expansion.

Chapter 4 ELECTRICITY

Activity 4.1:

S. No.	Appliance	Source of current
1	Car	Battery and fuel (petrol or diesel)
2	Wrist watch	Cell
3	Grinder	AC power supply
4	Mobile phone	Rechargeable battery
5	Satellite	Solar cell and battery
6	Torch light	Battery
7	Elevator	AC power supply

Activity 4.2:

S. No.	Material	Observation
1	Iron nail	Yes
2	Rubber band	No
3	Silver spoon	Yes
4	Brass spoon	Yes
5	Piece of wood	No
6	Glass rod	No
7	Pencil lead	Yes

Activity 4.4:

- Case 1 to 5 will not glow.
- In case 6 aluminium wire is a conductor. So bulb will glow.

EVALUATION:

I. Who am I?

- Conductor
- Magnetic compass needle
- Electric eel
- Tungsten
- Nichrome

II. Choose the correct answer:

- d
- a
- d
- b
- c

III. Complete the following:

- Uranium or plutonium

/(Note to teacher: student can name any nuclear fuel. Nuclear fuel is also a correct answer)/

- Battery
- mechanical

IV. Match the following:

- (b) AC Source
- (c) DC Source
- (d) glowing bulb
- (e) open circuit
- (a) grounding

IV. Identify the odd one in each group; assign suitable reasons:

1.	Iron nail	It is a conductor. Others are Insulators
2.	Electric iron	Uses heating effect of current. Others use magnetic effect of current
3.	Hydro electric power station	generates electricity in large scale. Others generate electricity in smaller scales.
4.	Electroplating	Involves chemical effect of current. Others - heating effect

V. Answer the following questions:

1.	Conductors:	steel spoon, silver spoon, copper wire, mercury, human body
	Insulator:	sand, salt (note to teachers: mention in class that salt, when dry is an insulator, but when it is dissolved in water, it is a conductor)

2. i) Hydro electricity
ii) Thermal power stations
iii) Wind mills
iv) Nuclear power station
3. A closed path in which charges or current flows is called an electric circuit.
4. i) Usage of energy – saving CFL, LED bulbs instead of incandescent bulbs
ii) Switch – off appliances when not in use.
iii) Use stairs to go down instead of lift.
5. Both A and R are true. R explains A

Chapter 5 MAGNETISM

EVALUATION:

I. Choose the correct answer:

1. d 2. b 3. d 4. d

II. Match the following:

1. Magnetic material
2. Loss of magnetism
3. Natural magnet
4. Non-magnetic material
5. An alloy

III. Find whether the statement is True or False; correct the statement if it is False:

1. False. They can be of different shapes, like horse shoe magnet, ring magnet, etc.
2. True
3. False. Decreases
4. True
5. False. Aluminium is a non-magnetic material

IV. Supplement suitable words in the following blanks:

1. Self demagnetization
2. Leading stone or lode stone
3. Keepers
4. Horse shoe magnet

V. Circle the odd one and give reason:

1. Rubber band - Non Magnetic material
2. Passing electric current - Magnet is temporary magnet
3. Heat - Not a property of a magnet

VI. Answer the following questions:

1. A magnet is material that produces a magnetic field around it where its attraction is felt by magnetic materials.
2. The region in the magnet where the magnetic field strength is maximum the pole of the magnet. The two poles are north pole and south pole.
- 3.

Magnetic substance	Non-Magnetic substance
Substances that are attracted by a magnet.	Substances that are not attracted by a magnet.
Eg. Iron, nickel and steel	Eg. Wood, paper, plastic etc.
They can be magnetized.	They can not be magnetized.

4. It is magnetite, an oxide of iron.
5. Magnetic materials - a piece of iron, coin made of steel, sewing needle, pant hook made of steel, soft iron. Others are non magnetic.
6. Mariner's compass is used by sailors to find the direction.

7. Refer Text Book Page No. 55; Sec. 5.6

8.

	Ordinary trains	Electromagnetic trains
1.	Run on ordinary metallic track	Run on electromagnetic track
2.	Speed is low	Speed is very high, above 400 km/hrs
3.	Produce greater noise	Noise is very low

9. These stickers contain permanent magnets inside. As wood is a non-magnetic material the sticker doesn't stick. But as the refrigerator door is made of magnetic material, it sticks.

VI. H.O.T.S:

1. Suspend the given magnet freely. Bring another permanent magnet close to the suspended magnet such that north pole is closer. If the end of suspended magnet moves away, then it is north pole and other is south pole.
2. The magnet got demagnetised.

Chapter 6 MATTER AROUND US

EVALUATION:

I. Choose the correct answer:

1. b 2. c 3. a 4. a 5. c
6. b 7. c 8. b 9. c

II. State true or false and correct the false statements:

1. True
2. False. Both liquids and gases can flow.
3. True
4. False. Different melting points.

5. True

6. False. Gases can flow in any direction.

7. False. Compounds are pure substances made of one kind of molecule.

8. False. When using a sieve in a construction site, the fine sand falls through while the stones stay on it.

9. True

10. True.

11. False. Decantation is not effective to separate fine sand and water.

III. Answer the following in 1 or 2 sentences:

1. Solids, liquids and gases
2. Refer textbook Page No. 65 bullet points.
3. Forces of attraction between gas particles are very weak and space between them is very large. Hence gases are compressible.
4. Adulteration refers to mixing other matter of lower quality with substances of higher quality or removing a valuable ingredient from the matter, knowingly and then selling it in the market claiming good quality.
5. LPG. Liquefied Petroleum Gas used as domestic fuel.
CNG. Compressed Natural Gas used as automobile fuel.
6. Substances which contain only one type of particles are called pure substances.
Eg. Oxygen, diamond, chlorine
7. The difference between a compound and a mixture is that a compound is made of only one type of particle and a mixture is made of different types of particles. The particles of a mixture are not combined chemically in any particular ratio.

8. Handpicking is preferred because of the various size, shape and colour of fruits.
9. Filtrate will be water and residue is sand.
10. Chemical substances are used to artificially ripen the fruits.
11. The purity of gold is expressed in "carats".
12. Refer textbook P. No. 76 - Section - 6.6.3

IV. Give reasons for the following:

1. Vapours coming from cooked food diffuse in air and reaches next room.
2. There is no space between particles of solid as they are tightly packed.
3. Particles of common salt occupy space between particles of water. Hence there is no change in volume.
4. Ice is in solid state. On heating forces of attraction weaken and it changes to liquid water.

V. Suggest suitable methods to separate the following:

1. Rice and suji: sieving (suji being fine powder, falls through the pores of the sieves and the rice remains above)
2. Husk and wheat: winnowing (husk being lighter will fly away but wheat falls down on the ground)
3. Flour and little stones: handpicking (stones can be picked by hand) or sieving (if flour is fine enough then stones will remain on top, while flour falls through the sieve).
4. Chalk powder and iron powder: magnetic separation (iron is magnetic but chalk is not).
5. Muddy water: Sedimentation (Heavier sand and mud would settle down in water)

VI. Answer in detail:

1. Solids - Compactly packed - Forces are strongest

Liquids - Loosely packed - Forces are moderate (Particles can move)

Gases - Most loosely arranged - negligible forces

Particles move freely

2. Refer textbook - Page No. 64 activity 6.4
3. Refer textbook - Page No. 65 activity 6.5
4. Solid substances can be separated through these most common methods of separation: hand-picking, winnowing, sieving and magnetic separation.

- Hand-picking: the method of separating substances based on size, shape and colour using hands is called hand-picking.

Eg: separating vegetables

- Winnowing: the method of separating lighter particles from heavier particles in the presence of wind is called winnowing.

Eg: separating grain and husk

- Sieving: the method of separating particles of different sizes using a sieve is called sieving.

Eg: sieving of flour

- Magnetic separation: the method of separating magnetic substances from non-magnetic substances is called magnetic separation.

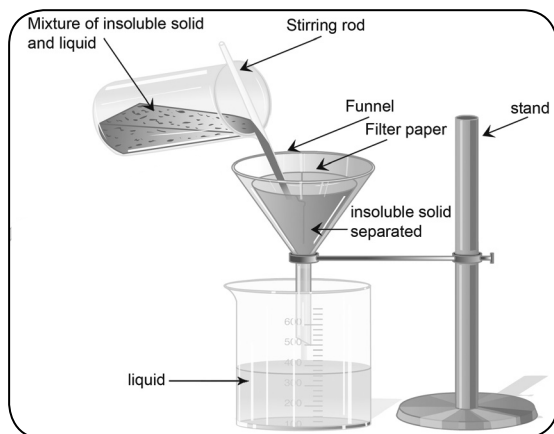
Eg: mixture of iron powder and sand can be separated using a magnet. Iron powder will stick on to the magnet.

5. Sedimentation and decantation are processes through which we can separate insoluble solids in liquid.

Sedimentation is the settling down of heavy and insoluble solid particles in a liquid. The solid which got settled is called sediment and the clear liquid above is called supernatant liquid.

In case of muddy water, the sand eventually gets sedimented and the clear water can be poured into another container slowly by using a glass rod. That is how sedimented muddy water can be decanted.

6. A circular filter paper is made into a cone by folding twice at right angles and fitted into a glass funnel. The funnel is then clamped to a stand and an empty container is placed below it. Now the mixture of sand and water is poured into the funnel, using a glass rod. The clear water is collected in the container kept below and is called the filtrate, while the sand gets collected on the filter paper and is called the residue.



7. //Note to teacher: a student can come up with different methods for this process. There may be different correct methods for separation of mixture. Let them come up with different ideas. Two are listed below://

Seeds can be separated by handpicking. Soil and water can be filtered. Soil will be the residue and water will be the filtrate.

(Or)

An appropriate sieve can be used to separate the seeds from the soil-water mixture. Then soil-water mixture can be subjected to filtration.

8. Preservatives in pickles are not adulterating agent. It is used to make pickle consumable for a longer time. The preservatives, if added, will be mentioned on the bottle and it is not hazardous to health.

VII. Higher Order Thinking Skills:

1. As it contains lot of pores.
2. Ice cube is kept at low temperature inside refrigerator. Temperature outside is more than melting point of ice. So ice cube melts.
3. Naphthalene balls kept in stored clothes in our homes disappear over a period of time because they undergo sublimation and form naphthalene vapours, which disappear into the air.

Chapter 7 CHANGES AROUND US

EVALUATION:

I. Fill in the blanks:

1. slow, fast
2. chemical
3. endothermic
4. Periodically
5. Saturated

II. Choose the most suitable answer:

1. reversible
2. slow, irreversible
3. fast, periodic
4. irreversible, exothermic
5. desirable, slow
6. man-made
7. A is true and R is false

III Answer in 1 or 2 sentences:

1. Changes that require long time to get completed eg: growth of plant, rusting of iron, ripening of fruits.
2. Periodic changes occur repeatedly at definite intervals of time. Non-periodic changes occur at any time and are not repeated at regular time intervals.
3. Changes that are useful to us are called desirable changes. For example, ripening of fruits and cooking of food. Changes that are not useful or cause difficulties to our normal day to day life are called undesirable changes. For example, breaking of things and earthquakes.
4. In some reactions, heat is released. They are called exothermic reactions. Eg: burning of paper, coal, petrol.

In some reactions, heat energy is absorbed, they are called endothermic changes, e.g. glucose dissolved in water, ice changing to water.
5. Yes it is. The folded paper boat can be unfolded into sheet of paper carefully.
6. When air is blown, balloon expands. When it is released, air goes out and balloon regains its original nature. This is reversible. When we prick a balloon, a hole is formed. Hence it cannot be expanded if we blow, as air will leak through the hole. This is irreversible.

IV. Circle the odd one and give a reason:

1. Germination of seed – slow change
Bursting of crackers, burning of paper, bursting of balloon – fast change
2. Rusting – Irreversible change
Melting, condensation, freezing – reversible changes

V. Analogy:

1. Evaporation
2. Exothermic

VI. True or False. Correct if false:

1. True: The pieces cannot be joined to get original shape of vase.
2. False: It involves absorption of heat. Hence it is an endothermic change.
3. True: It takes place in a very short time.
4. True: Small particles have small area and are more soluble.
5. True: Camphor kept in open will sublime.

VII. Answer the following in detail:

1. Refer textbook - Page No. 84
2. (a) It is a slow change as it takes long time for coal to burn.
(b) It is an irreversible process as coal cannot be got back.
3. Iron undergoes physical change as its shape alone is modified.
4. Curdling of milk with lime is a fast irreversible chemical change.
5. The two components of a solution are solute and solvent. Refer textbook - Page No. 87

VIII. Higher Order Thinking Skills:

1. Heating

- When heated, body becomes hot and no new substance is formed.
- Hot substance can be cooled.
- It is reversible.
- Eg: heating water, heating a table spoon.

Burning

- While burning the substance combines with oxygen in air to form new substances.
 - It is irreversible.
 - Burning of paper, burning of wood.
2. Making of dry clay into wet clay is reversible (we have to supply water to make clay wet).
Making pots out of wet clay is also reversible (shape of the pots can be varied when clay is wet).

Baking of the pots is irreversible (once the pots are baked then supplying water or breaking it have no effect on it. It is irreversible).

3. Rusting: The pot hanger is made of iron and may rust due to contact with moist air.

Photosynthesis: Plants prepare food by a chemical irreversible change called photosynthesis.

Combustion: Burning of candle is due to combustion of wax.

Digestion: Digestion is an exothermic chemical irreversible change where food is broken down to give energy.

Anaerobic respiration is a periodic process.

Cooking is an endothermic chemical change.

IX. Group activity to be done by students.

X. Application in real life:

1. It is an undesirable change.
2. Silver articles can be protected by keeping them in moist free air tight boxes.

Chapter 8 AIR

EVALUATION:

I. Match the following

1. Weather Changes
2. Ozone
3. Coldest layer
4. Charged Ions
5. Space shuttles

II. Complete the following:

1. Earth
2. Gravity
3. Antoine Lavoiser

4. Nitrogen
5. Joseph Priestly
6. Oxygen
7. Greenhouse gases or carbon dioxide

III. Answer the following:

1. Lithosphere, hydrosphere, atmosphere and biosphere.
2. The realm where the land, water and air meet is called biosphere.
3. It is considered a blanket because it keeps the earth warm.
4. According to Indian philosophy the panchabuthas are Earth (prithvi) Water (Jala) Fire (tejas) Wind (Vayu) and Space (akash).
5. Joseph Priestly used a sealed inverted transparent container in which he used a lighted candle, a live mouse and both together with a plant to test the properties of air.
6. The candle extinguishes after sometime, because it uses up all the oxygen in the container.
7. The mouse dies after sometime as it uses up the available oxygen and the mouse does not have any more oxygen to breathe.
8. Priestly put a plant in the container along with a mouse. Then he observed that the mouse did not die. He inferred that there was something in air that helped the mouse live. Without the plant the mouse consumed all of that substance. With the plant, it seemed like the substance that helped the mouse live got replenished. Hence the mouse lived.
9. Priestly put a plant in the container along with a burning candle. Then he observed that the candle fire extinguished. He inferred that there was something in air that helped the candle burn. Without the plant the candle consumed all of that substance. With the plant, it seemed like the substance that

helped the candle burn got replenished. Hence the candle continued to burn.

10. Put some hydrilla in an inverted funnel filled with dechlorinated water. Place a test tube filled without air bubbles with the same water over the funnel. Keep it in sunlight for at least 8 hours.

You will slowly start seeing some air bubbles in the test tube. Carefully empty the water in the test tube without disturbing the air bubble and seal the test tube with your thumb. Light a match stick and hold it near the mouth and release your thumb. You will find the matchstick bursting into a flame. This proves that the bubble inside was oxygen released by the hydrilla as oxygen is a highly flammable.

11. The easiest test for detecting carbon dioxide is to pass it through a solution of lime water. This is because carbon dioxide reacts with calcium hydroxide solution to give calcium carbonate which is insoluble. Take a solution of lime water in a beaker. Blow bubbles through a straw. You will find that the lime water slowly turns milky proving that the air blown has carbon dioxide.
12. When you take a container just out of the fridge, due to the temperature difference the water vapour around the container condenses in water droplets. This is why you see water on a container just taken out of the refrigerator.
13. Refer textbook Page No. 97 and 98 - "The atmosphere... rainfall".
14. Refer textbook P. No. 98 - "Solids... processes".
15. Burning of a substance in air to give out heat and light is called combustion.
16. Refer textbook P. No. 99 - Section 8.5.1.
17. Refer textbook P. No. 99 -100 - Section 8.5.2.
18. Carbon dioxide + Water $\xrightarrow[\text{chlorophyll}]{\text{sunlight}}$ carbohydrate + oxygen
19. Food + oxygen $\rightarrow$ Carbon dioxide + water + energy

IV. Analogy:

1. Carbon dioxide: support extinguishes fire
2. Ozone: stratosphere

V. Higher Order Thinking Skills:

1. No. Lack of atmosphere survival of plants or animals.
2. The air in the coastal area is humid because of the presence of sea. Rate of evaporation will be higher near coastal areas.

Chapter 9 WATER

EVALUATION:

I. Choose the most suitable answer:

1. 71
2. 50
3. Glaciers
4. Desalination
5. aquifer
6. Condensation and Evaporation

II. State if the following statements are true or false. Correct the false ones.

1. True
2. False - Lakes from major portion
3. False - Decrease the water level
4. True
5. True
6. False - Can be done-Everywhere

III. Match the following:

1. lakes and rivers
2. aquifer
3. can be harvested
4. salty
5. melt to supply water to rivers

IV. Answer in 1 or 2 sentences:

1. The amount of salt present in water is salinity.
2. Glaciers & icecaps; Rivers; Ground water
3. Rainwater penetrates through the soil and gets collected over the rocky bed to form a reservoir which is called the aquifer.
4.
 - Industrialization, building huge commercial and residential buildings consumes a lot of water.
 - Using deep bore wells for agriculture due to poor rains drains the water table.
 - Pollution of water bodies by industrial and domestic waste has reduced our sources.
5. The process by which vapor turns to liquid upon cooling is condensation.
6. Deforestation results in decrease of rainfall and fewer trees in the catchment area causing floods.
7. It is the conversion of saline sea water into pure water suitable for drinking. Desalination plant at Minjur, near Chennai in Tamilnadu is applying this process.
8. Industries and factories must have sewage treatment facilities to avoid pollution as well as recycle the water for other purposes.

V. Answer in detail:

1. *Refer textbook Page No. 108 - 110, Section 9.3 and 9.4 with diagram.*
2. *Refer textbook - Page No. 106, Section 9.2.*
3.
 - Rainwater must be effectively harvested using the right techniques. Collecting the rainwater falling on rooftops in a trench below the ground

or in small tanks in houses is called rainwater harvesting.

- Collection of water in trenches seeps into the ground replenishing the water table; collection of water in small tanks can be used directly for washing or gardening.
 - Rainwater harvesting also arrests salt water intrusion reduces flooding and improves top soil and plant growth.
4. *Refer textbook Page No. 111, Section 9.6.1 - any four points.*
 5. *Refer textbook - Page No. 110, Section 9.5.*

VI. Higher Order Thinking Skills:

1. Polluted air has smoke, poisonous gas, unwanted dust etc., These mix with water in lake, rivers and contaminate them.
2. At my school rain water from the terrace is collected in an underground covered pit from where it goes through several layers of sand and gets collected in the well.

Chapter 10 CHEMISTRY IN EVERYDAY LIFE

EVALUATION:

I. Match the following:

1. natural plant fibers
2. thermoplastics
3. thermosetting plastics
4. natural animal fibers
5. soda lime glass
6. reinforced cement concrete
7. synthetic fibers

II. Who am I? What am I used for?

- | | |
|-------------|------------------|
| 1. Cement | 4. Soap |
| 2. Concrete | 5. Mirror |
| 3. Glass | 6. Thermoplastic |

III. Give two examples for each of the following:

1. Cotton, jute
2. Nylon, Rayon
3. PVC, Polythene
4. Bakelite, Melamine

IV. Mention two uses for each of the following:

1. Floor tiles, Pipes, Toys
2. Bags, Buckets, Toys
3. Soda bottles, Window glass
4. Beakers, Heating vessels
5. Socks, Bristles, Parachutes
6. Sweaters, Socks, Carpets
7. Fabrics, Seat belts
8. Switches, Combs, Handles

V. Answer in 1 or 2 sentences:

1. Fiber is converted into long threads called yarn by spinning. Yarn is made into fabric by weaving, knitting, knotting or felting.
2. If different fibres are blended together, the fibre will have the combined property of component fibres. It helps in improving the appearance, comfort, performance and durability of fabric.

Examples:

Polyester/cotton blend: Clothes are easy to take care of and are crease-resistant.

Cotton/lycra blend: Jeans are more comfortable, stretchy and fit better than cotton jeans

3. Plastics are a wide variety of synthetic solids, with a general property of being molded or shaped into many things. The raw materials needed to make most plastics are petrochemicals, which come from petroleum and natural gas
4. Mugs, Buckets, Curtains, Containers, Pipes, Taps
5. Thermoplastic can be melted and remoulded.
Thermosetting plastics cannot be remoulded
6. When thrown into soil, they prevent seepage of rain water. When burnt, they produce toxic gases which pollute air.
7. They are separated into recyclable and non recyclable plastics. Recyclable plastics are sent to recycling centres. Non recyclable plastics are crushed into small pieces, used for land filling and road laying.
8. Sand, Sodium carbonate and Lime stone
9. By coating one side of plain glass sheet with silver or mercury.
10. Cement is a mixture of chemical substances such as clay, limestone and gypsum mixed in a particular proportion. Cement when mixed with water followed by drying, sets into a very hard mass.
11. It is a mixture of cement, gravel, water and sand in right proportions along with a frame work of steel rods. It is used for making pillars, beams, roofs etc.,
12. Soap when mixed with water forms lather. Lather has the ability to dissolve the dirt particles and kill germs in your hand and they are removed when you rinse your hand in water.

VI. Answer in detail:

1. Plastics prevent rain water from seeping into the soil.
 - They accumulate in water bodies, killing the animals living there.
 - They are harmful to animals who can choke on plastic when consumed.
 - Marine animals get entangled in plastic nets and die.
 - They block drains and cause flooding during rains.
 - They give out poisonous gases when they are burnt.

2. Natural fibres:

Natural fibres are obtained from plants and animals. They usually have short fibres, with the exception of silk, whose continuous filaments are up to one kilometre in length.

Sources of natural fibres:

Natural fibres from animals

- Wool is used for warm clothing.
- Cashmere, the hair of the Indian cashmere goat, is famous for its softness.

Natural fibres from plants:

- Grass, hemp, coir (coconut fibre) are used in making rope.
- Straw (a dried form of grass) and bamboo are used to make hats.
- Fibres from pulpwood tress, cotton, rice, hemp etc. are used in making paper.
- Cotton, flax, jute, hemp and bamboo fibre are used in clothing.

Synthetic fibres:

Synthetic textiles are man-made, usually from chemical sources.

Sources of synthetic fibres:

- Polyester fibre is used in clothing like rain coats, medical textiles, etc. It is blended with fibres such as cotton for other types of clothing.
- Acrylic is a fibre used to imitate wools.
- Nylon is a fibre used to imitate silk. Thicker nylon fibres are used in rope and outdoor clothing.
- Spandex (also known as Lycra) is used to make tight-fitting clothing like swimsuits, as it doesn't restrict movement.

Fibre blends:

If different fibres are blended together, the fibre will have the combined property of component fibres. It helps in improving the appearance, comfort, performance and durability of fabric. Let us look at some examples.

- Polyester/cotton blend: Clothes are easy to take care of and are crease-resistant.
 - Cotton/lycra blend: Jeans are more comfortable, stretchy and fit better than cotton jeans.
 - Acrylic/wool blend: less expensive
3. Soaps are cleaning products which effectively remove dirt, soil, germs and other contaminants. They help us stay healthy.

Take 35 ml of water in a beaker and add 10g of sodium hydroxide to it. Dissolve by stirring with a glass rod.

After it dissolves completely, add 50g of coconut oil very slowly and stir the mixture with the glass rod continuously. Heat the mixture using a low flame on a sand bath, with constant stirring, until it becomes thick like a paste. Fill it up in a match box and let it cool and set. Thus soap is made.

4.

Natural fiber	Synthetic fiber
1. It is obtained from plants and animals.	1. It is man made using chemicals
2. It has natural colour and can be dyed as desired.	2. It is coloured using chemicals.
3. Comfortable to wear and is environment friendly.	3. Uncomfortable to wear and harmful to environment
4. When burnt it turns to ash and does not harm the environment.	4. When burnt gives out toxic substances that pollute environment.

VII. Higher Order Thinking Skills:

1. **Soaps:** Made from vegetable oils or animal fats. They are biodegradable. Soaps cannot be used with hard water as they do not wash away easily and tend to stick on clothes.

Detergents: Made from petrochemicals. Some detergents are non-biodegradable. They can be used with any kind of water.

2. We can avoid using plastics and replace them with degradable material like jute, paper, cloth, recyclable plastics and wood. We should start with our home and control our contribution towards environmental pollution.
- Thermoplastics can be recycled and reused.
 - Thermosetting plastics can be broken

into coarse powder and used as landfills, fuel in industries and in laying new roads.

- We can also find methods to make degradable plastics.
3. Coloured glass is made by adding specific chemicals to molten glass. For example, copper oxide gives peacock blue colour and manganese oxide gives purple colour.

Chapter 11

THE LIVING WORLD OF PLANTS

EVALUATION:

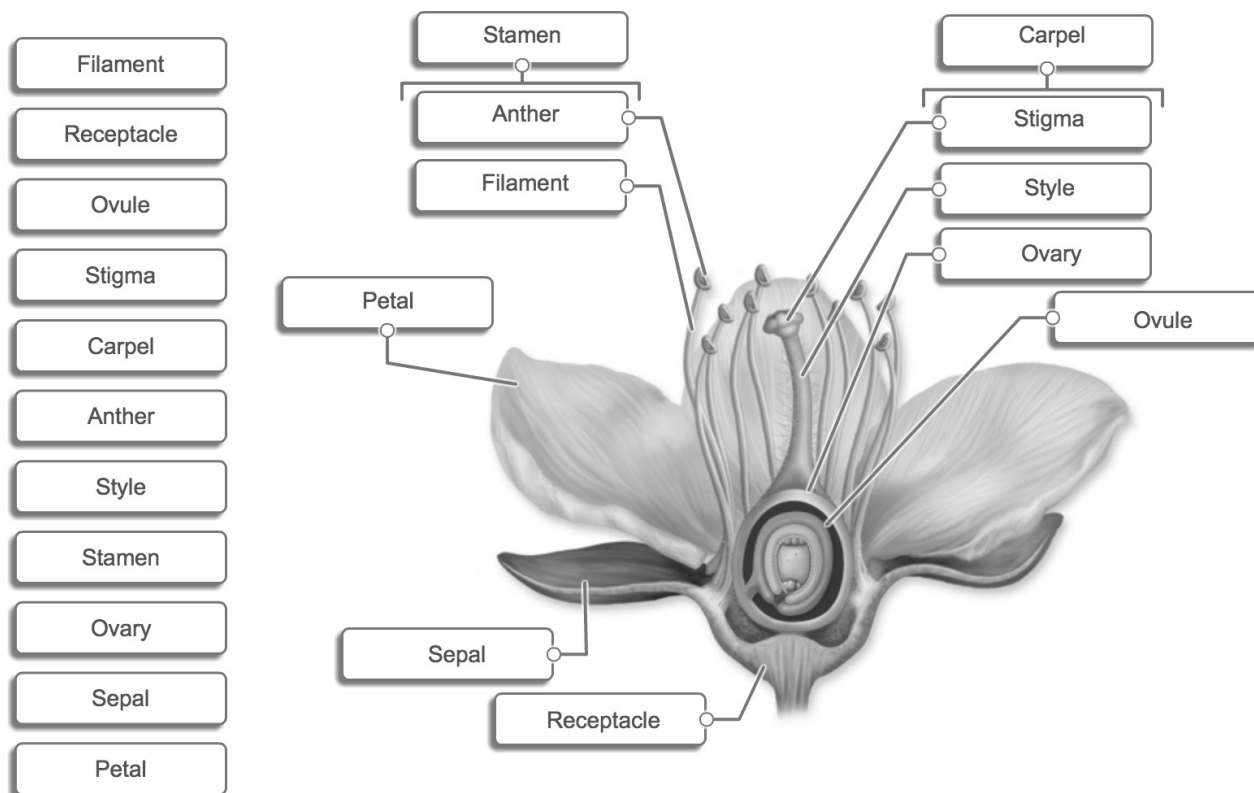
I. Choose the correct answer from the following:

1. leaves
2. axillary bud
3. hydrophytes
4. Water hyacinth
5. Petiole
6. Xerophytes

II. Match the following:

1. Calyx sepals
2. Peas tendrils
3. Opuntia thorns
4. Pepper climber
5. Lotus hydrophyte

III. Label the parts of the given flower:



IV. Answer the following questions in one or two lines:

1. Opuntia is a xerophyte that lives in the desert. Due to the scarcity of water, its leaves are modified into spines to prevent excessive loss of water through transpiration.
2. Plants growing in dry, deserts have long roots to go deep into the soil in search of water.
3. Androecium and gynoecium are the male and female reproductive parts in plants.
4. During photosynthesis carbon dioxide is taken in and oxygen is given out by plants, while during respiration oxygen is taken in and carbon dioxide is given out.

V. Answer the following questions:

1. Roots absorb water and other nutrients from the soil and transport it to the

stem. They fix the plant firmly into the soil. Some roots store food material for adverse seasons. Eg , radish, carrot and turnip.

2. Thorns are spiny structures found in xerophytes. Xerophytes are plants which grow in dry and arid regions. Due to the scarcity of water, the leaves are modified into thorns, so as to reduce the surface area, and thereby minimise transpiration (loss of water) from the leaf surface.
3. a. **Tendrils** – Tendrils are coiled wire like structures which help climbers to cling on to the host.
b. **Petals** – Petals are the colourful parts of the flower. They form the second whorl of the flower and attract insects for pollination.
c. **Sepals** – Sepals, also called calyx are leafy green coloured structures which form the outermost whorl of the flower. They enclose and protect the buds.

- d. **Anther** – Anther forms the third whorl of the flowers. It has a long filament and a bag like structure on the top. The anther contains the pollen grains which contain the male gametes.
- e. **Aerial parts of the plant** – The part of the plant above the soil is the aerial part also called the shoot system. The shoot system contains stem, leaves, flowers, fruits and buds.
- f. **Radicle** – Radicle is the part that shoots out of the seed when it germinates and grows downwards into the soil. It forms the root system of the plant.
- g. **Plumule** – Plumule is the light green coloured part that shoots out of the seed when it germinates and grows upward. This forms the shoot system of the plant.
- h. **Corolla** – Corolla is the second colourful whorl of the flower, inner to the sepals that contain **petals**. Petals may be of different colours in different flowers.

4. The stems of hydrophytes have a lot of airspaces to help them float in water.

Chapter 12

THE LIVING WORLD OF ANIMALS

EVALUATION:

I. Fill in the blanks:

1. Biodiversity
2. ecosystem
3. tail
4. excretion
5. adaptation

II. True or false:

1. False
2. True
3. False
4. True
5. False

III. Match the following:

Bacteria	unicellular
Lizards	leathery eggs
Euglena	flagellum
Paramecium	slipper shaped
Fish	gills

IV. Answer the following questions in one or two lines:

1. Biodiversity is the shortened form of two words “biological” and “diversity.” Biodiversity is the term that refers to all the living organisms that reside on earth.
2. Lizards have rough, scaly skins. They have small heads and long tails. They lay their eggs on land, and their eggs have leathery shells. Unlike snakes, they have legs and movable eyelids. Lizards have short legs with claws. They breathe through lungs.

//Note to teacher: The student can write any two of the above adaptations//

3. A camel has thick lips so that they can eat the prickly desert plants like cactus without getting hurt.
4. An amoeba moves by changing the shape of its body to form a false foot or pseudopodia.

V. Answer the following questions:

1. The specific area where an organism (animal, plant, human) lives is called its habitat. An ecosystem includes all

the living things (plants, animals and organisms) in a given area, interacting with each other and with their non-living environments (weather, sun, soil, climate and atmosphere) as well.

The difference between the two is that while a habitat refers to a place where a living organisms lives, an ecosystem is a group of living organisms and their surrounding environment

2. The factors that affect the abundance of living organisms on earth are food and water, habitat and ecosystems, environmental factors like temperature, rain fall, humidity, the amount of sunlight received, natural calamities etc. The presence of predators in their habitat and competition for food, shelter, a mate, territory etc. also affect the abundance of living organisms.

//Note to teacher: Refer text book – Page No. 149-150 for any one factor//

3. Most fish have streamlined bodies that help them to cut through the water easily. They have special organs called gills that help them breathe in oxygen from the water. The bodies of most fish are covered with scales. The skin gives out a slimy secretion that oozes out between the scales and helps in movement. They have two types of fins that help them swim and change their direction in water. The strong tail acts as a rudder helping them to change their direction.
4. Camels have long sturdy legs that keep their bodies away from the hot sand. Their knees have leathery patches that protect their skin when they kneel down in the hot sun. They have broad, leather-like pads under their hooves that spread out and prevent the animal from sinking into the sand.

Chapter 13 HEALTH AND HYGIENE

I. Tick the correct and cross the wrong statements:

1. ✓ 2. ✓ 3. ✗ 4. ✗ 5. ✗

II. Match the following vitamins/minerals with their deficiency disease:

- | | | |
|--------------|---|-----------------|
| 1. Vitamin A | - | night blindness |
| 2. Iodine | - | goitre |
| 3. Vitamin C | - | scurvy |
| 4. Vitamin B | - | beri-beri |
| 5. Iron | - | anaemia |

III. Fill in the blanks:

1. Meat , milk
2. roughage
3. bacteria
4. Kwashiorkor, Marasmus
5. groundnut and coconut.

IV. Answer the following in one or two lines:

1. Water is important for the proper functioning of the body because it is necessary for all the chemical reactions that take place in our body. It also helps to regulate body temperature.
2. Diseases or abnormalities arising as a result of consumption of insufficient quantities of essential nutrients are known as deficiency diseases.
3. Rice, wheat, corn are foods that contain carbohydrates.
4. Iron is essential for the formation of blood, and lack of iron may lead to anaemia. Calcium is necessary for our bones and teeth.

V. Answer the following:

1. The food we eat contains various substances that are needed by our body. These are called nutrients and they nourish our body. Macronutrients are nutrients that are required by the body in large quantities. eg. proteins, carbohydrates and fats. Micronutrients are nutrients required by the body in minute quantities. eg. vitamins and minerals.
2. The condition that arises as a result of iron deficiency is called anaemia. The symptoms are fatigue and shortness of breath.
3. To stay healthy one must do some form of exercise every day. Exercise builds stronger bones and muscles and improves blood circulation. For the elderly long walks is sufficient exercise. Every part of your body, including your brain, needs rest. It is important for both your physical as well as mental health. The best form of rest is sleep. The amount of sleep required by the body depends on your age.
4. The doctor would have diagnosed Sona with having a Vitamin A deficiency. He would have advised her to add carrots, sweet potatoes, dark leafy vegetables, and liver to her diet.

Chapter 14

STRUCTURAL ORGANISATION OF A CELL

EVALUATION:

I. Who am I?

- | | |
|-----------------|---|
| 1. Cell | 5. Lysosome |
| 2. Mitochondria | 6. Chlorophyll
(Plastids with pigment) |
| 3. Nucleus | |
| 4. Vacuole | |

II. Fill in the blanks:

- | | |
|--------------------|--------------------|
| 1. Microscope | 5. Water |
| 2. Robert Hooke | 6. Cell organelles |
| 3. Plant cell | 7. Ribosomes |
| 4. Amoeba/Bacteria | 8. Nucleus |

III. Say whether the following statements are 'true' or 'false':

- | | | |
|----------|----------|---------|
| 1. True | 3. False | 5. True |
| 2. False | 4. False | |

IV. Arrange in a correct sequence:

1. Insect egg, Hen egg, Ostrich egg
2. Bacteria, Spirogra, Mango tree

V. Analogy:

- | | |
|--------------|------------------|
| 1. Neem tree | 2. Multicellular |
|--------------|------------------|

VI. Answer the following questions in one or two lines:

1. Plastids are cell organelles that are found only in plant cells.
2. Cell membrane is the outermost layer of an animal cell.
3. Leucoplasts are colourless plastids.
4. Plant cells have a large central vacuole while in animal cells, there is either no vacuole or a small vacuole that acts as a storage compartment.
5. Ribosomes are organelles that stick on to the endoplasmic reticulum giving it a rough appearance.

VII. Answer the following questions:

1. Lysosomes destroy any pathogens like bacteria that enter the cell. If required they can destroy their own cells if the entire cell is defective. Hence they are known as the 'suicide bags' of the cell.
2. The nucleus contains chromosomes with genes. These are responsible for transfer of characters from one generation to the next.

3. The cell membrane is semipermeable because it allows entry and exit of only certain substances in and out of the cell through its tiny pores.
4. An animal cell does not have a rigid cell wall around its cell membrane. This enables them to develop different shapes and structures.

Chapter 15

ORGANISATION IN ORGANISMS

EVALUATION:

I. Match the following:

1.	Vitamin D synthesis	d	iii
2.	Process of taking in air	a	iv
3.	Production of various blood cells	e	i
4.	Walls of blood vessels and lining of internal organs	b	v
5.	Secretion of hormones	c	ii

II. Rearrange in the right order, the levels of organisation in the living world :

Cells, Tissues, Organs, Organ system, Organism

III. Identify the systems these organs belong to:

1. Nervous system
2. Digestive system
3. Excretory system
4. Circulatory system
5. Integumentary system

IV. Answer the following questions in one or two lines.

1. Digestion is the breakdown of foods into a soluble form that can be absorbed by the blood and carried to all parts of the body.

The main parts are the mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus and the associated glands or digestive glands like the liver and pancreas.

2. The male gametes are produced in the testes, and the female gametes in the ovaries.
3. The skeletal and muscular system are involved in movement and locomotion.
4. The heart pumps blood to all parts of the body.

V. Answer the following questions:

1. The nervous system consists of the brain, the spinal cord and the nerves. The nervous system is divided into the central nervous system and the peripheral nervous system.

The brain and the spinal cord, make up the central nervous system (CNS). The cranial nerves attached to the brain, and the spinal nerves attached to the spinal cord, make up the peripheral nervous system (PNS).

2. Hormones are chemicals secreted directly into the blood stream, to be carried to their target organs. They are secreted by ductless glands present in our body that make up the endocrine system. The pituitary, thyroid, pancreas and adrenal are examples of endocrine glands.
3. Oxygen is taken in by the respiratory system from the air and is carried to different parts of the body by blood. The process of taking in air is called inspiration. This oxygen is used to breakdown the digested food to produce energy. Carbon dioxide, which is produced during this process, is eliminated out of the body. The process of giving out air that is rich in carbon dioxide is called expiration.
4. Since the skeletal muscles are attached to the bones, they help in giving shape to the body and make movements possible. The

muscular system helps us to maintain our posture when we walk, stand or sit. They generate heat as a by-product of muscle activity, which helps in maintaining body temperature. Smooth muscles and cardiac muscles are involuntary and help in movement of the organs concerned.

Chapter 16 ENVIRONMENTAL SCIENCE - RESOURCE USE AND MANAGEMENT

EVALUATION:

I. Fill in the blanks:

- | | |
|--------------------|-----------------|
| 1. biotic, abiotic | 5. recycled |
| 2. biomes | 6. earthworms |
| 3. food web | 7. human beings |
| 4. first | 8. Oil spills |

II. Match the following:

1. green plants
2. herbivores
3. carnivores and omnivores
4. top predators
5. bacteria
6. soil and water

III. Pick out the biodegradable waste from the following items found in a garbage bin:

straw, egg shells, groundnut shells, old clothes (cotton), rotten fruits, cardboard cartons, old books, fruit peels, tea leaves

IV. Answer the following questions in one or two lines:

1. Plants are called primary producers because they produce food for themselves by utilizing abiotic components through the process of photosynthesis. Primary consumers, such as herbivores, then eat the plants that contain energy.

2. A food chain is the linear sequence through which matter and energy pass on from one living organism to another. Arrows indicate the direction in which energy is transferred & increasing order of trophic levels.
3. Merit: The ash obtained can be used as manure. Demerit: Toxic gases released cause air pollution and respiratory diseases.
4. Industrial waste let out into water bodies will contaminate water. Oil spills contaminate water and endanger marine life.

V. Answer the following questions:

1. The poisonous gases let out by industries, vehicles using petroleum-based fuels (man-made cause of air pollution), forest fires and volcanic eruptions are natural causes of pollution. If the air we breathe is contaminated, it results in various health problems like allergies, cough and lung diseases.
2. A land fill is the most common method of waste disposal in which waste is filled into low-lying areas or unused pits. Clay generates foul smell and affects our health. Some toxic substances like battery acid may leak into the ground and contaminate soil and water.
3. When small ecosystems are put together they form vast geographical areas which are characterized by their own climate, rainfall, soil, water sources, flora and fauna. Such vast geographical areas are called biomes.
4. We need to reduce the amount of waste generated in homes and schools. In this way fewer amounts go to the landfill. Avoid using disposable plates, cups etc. Carry your shopping bag with you instead of taking a plastic bag from the

store. By printing on both sides of paper you also reduce paper wastage.

Chapter 17 ECONOMIC BIOLOGY

EVALUATION:

I. Fill in the blanks:

1. Botany
2. herbs
3. Cotton, jute, (or any two)
4. Cardamom, clove (or any two)
5. Timber

II. Choose the correct answer from the given options:

- | | | |
|----------|------------|----------|
| 1. Neem | 3. Potato | 5. Wheat |
| 2. Clove | 4. Jasmine | |

III. Match the following:

- | | |
|-----------|-------------|
| 1. spice | 4. medicine |
| 2. timber | 5. fibre |
| 3. food | |

IV. Say true or false. If false correct the statement:

1. False - Commercial purpose for making furnitures
2. True
3. True
4. False - Ecology

V. Analogy:

- | | | |
|---------|------------|----------|
| 1. Root | 2. Malaria | 3. Fiber |
|---------|------------|----------|

VI. Answer the following questions in one or two lines:

1. Potato, carrot, wheat, rice, apple are some of the food yielding plants.

//Note to the teachers: this answer may be varied- the teacher will have to decide//

2. Cotton, jute, flax, hemp, coconut are fibre yielding plants.

3. Clove, cinnamon, cardamom, pepper, cumin are some of the examples of spices.

//Note to the teachers: this answer may be varied- the teacher will have to decide//

4.
 - Animals help plants to disperse their seeds.
 - Insects like bees and butterflies help to pollinate flowers.
 - Small animals and earth worms aerate the soil, providing the roots of plants with oxygen.
 - When animals respire they release carbon dioxide into the air which is used by plants to prepare their food.
 - When animals die their bodies decompose and become natural fertilizer that enriches the soil for plants and trees to grow in.

//Note to the teachers: students can mention any 1 from the above//

VII. Answer in detail:

1. Plants are useful to us in numerous ways. Some of the uses of plants are:
 - Plants give out oxygen which we breathe
 - Plants provide us food to eat and be healthy eg. rice, wheat, potato, banana
 - They provide us medicines to treat illness eg. basil, eucalyptus
 - They give us fibre for making clothes eg. cotton, jute
 - They yield timber which is used to make furniture and houses. Eg. teak, ebony
 - They are also used for making perfumes and cosmetics
 - They protect our environment by preventing soil erosion and maintaining water cycle.

2. Plants form an important part of earth's ecosystem, called producers, and thereby help in maintaining ecological balance. Trees prevent soil erosion. Plants help in maintaining the water cycle.
3. Plants are grown for their beauty. An area of land in which both flowering and non-flowering plants are grown in an organised manner, is called a garden. The art of beautifying land with plants and trees is called landscaping. Plants that are used for gardening purposes are called ornamental plants. Examples of ornamental -flowering plants are rose, lily, jasmine, chrysanthemum,

tulips, shoe-flower, and non-flowering plants such as asparagus, and money plant. Even water lily and lotus are used as ornamental plants, in small man-made ponds.

4. Plants are an important source of food for humans, animals and other living organisms. They release oxygen into the air which is important for animals to respire. Plants provide many animals with shade, shelter and homes. In forests, trees, plants and grass help protect the animals from their predators.