

# केन्द्रीय विद्यालय संगठन

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आंचलिक शिक्षा एवं प्रशिक्षण संस्थान, मैसूर  
**ZONAL INSTITUTE OF EDUCATION AND TRAINING,  
MYSURU**

**Competency Based Assessment in Science: Design of test items**

**(31.07.2024 -02.08.2024)**

**CLASS VII**

**SCIENCE**



## DIRECTOR'S MESSAGE.....

It is with profound delight and utmost pride that we present the Competency Based Assessment question bank for **CLASS VII** which was prepared by TGT(Science) of the feeder regions during the 03 – day workshop on “**Competency Based Assessment in Science: Design of test items**” It’s my firm belief that access to quality education should know no boundaries, transcending social and economic constraints. Our collective vision is to empower all students and teachers with the tools for success and intellectual growth.

With their steadfast dedication, the TGT(Science) from the feeder Regions namely Bangalore, Chennai, Ernakulam and Hyderabad have invested their knowledge and expertise in preparation of the CBA test items.

It is with pleasure that I place on record my commendation for the commitment and dedication of the team of TGT(Science) from the four Regions, Shri. Manoj Kumar Paliwal, Principal KV No.1 Madurai, Chennai Region &

Associate Course Director, the Resource persons Ms Seema Saraswat, TGT(Science) KV Vijayapura and Ms Neeta Wage TGT(Science) KV Hebbal and Mr. Dinesh Kumar, Training Associate (Physics) from ZIET Mysore who has been the Coordinator of this assignment.

Wishing you all the very best in your academic journey!

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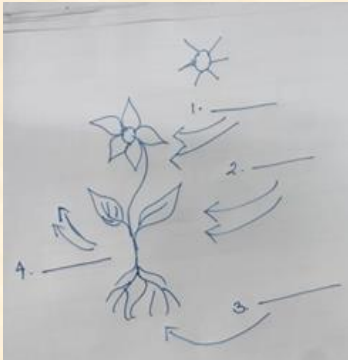
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## CHAPTER - NUTRITION IN PLANTS


S.NO	QUESTION	POINT VALUE															
<b>SECTION -A (MCQ)</b>																	
<b>1</b>	Which condition is best to prevent rotting for a long time? a. Cold and Humid b. Cold and Dry c. Warm and Dry d. Warm and Humid	<b>1</b>															
<b>2</b>	From the table given below find out during which climate the transpiration rate is more.  <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">No</th> <th style="width: 40%;">Climate</th> <th style="width: 50%;">Amount of water released</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">a</td> <td style="text-align: center;">Sunny</td> <td style="text-align: center;">20 ml</td> </tr> <tr> <td style="text-align: center;">b</td> <td style="text-align: center;">Humid</td> <td style="text-align: center;">7 ml</td> </tr> <tr> <td style="text-align: center;">c</td> <td style="text-align: center;">Windy</td> <td style="text-align: center;">14 ml</td> </tr> <tr> <td style="text-align: center;">d</td> <td style="text-align: center;">Shady</td> <td style="text-align: center;">8 ml</td> </tr> </tbody> </table> 1. a                      2. b                      3. c                      4. d	No	Climate	Amount of water released	a	Sunny	20 ml	b	Humid	7 ml	c	Windy	14 ml	d	Shady	8 ml	<b>1</b>
No	Climate	Amount of water released															
a	Sunny	20 ml															
b	Humid	7 ml															
c	Windy	14 ml															
d	Shady	8 ml															
<b>3</b>	Which of the following is a parasite? a. Yeast b. Mushroom c. Cuscuta d. Algae	<b>1</b>															
<b>4</b>	Role of chlorophyll is It absorbs carbon dioxide  It captures light energy  It releases oxygen  It transports water	<b>1</b>															
<b>5</b>	Carbon dioxide is essential for photosynthesis. Plants absorb CO <sub>2</sub> through ..... a. Chlorophyll b. Stomata c. Roots d. Flower	<b>1</b>															
<b>6</b>	Nutrition in fungi is..... a. Saprotrophic b. Parasitic c. Heterotrophic d. Autotrophic	<b>1</b>															

7	The raw materials of photosynthesis are a. CO <sub>2</sub> & O <sub>2</sub> b. O <sub>2</sub> & water c. CO <sub>2</sub> & water d. O <sub>2</sub> & N <sub>2</sub>	1
8	_____ energy is converted to chemical energy during photosynthesis. a. Kinetic b. Solar c. Electrical d. Thermal	1
9	Which of the following fixes atmospheric nitrogen into the soil? a. Lactobacillus b. Cyanobacteria c. Mycobacteria d. Rhizobium	1
10	Identify the saprophytic organism from the following. a. Mushroom b. Algae c. Lichen d. Cuscuta	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	Assertion : Plants are autotrophic in nature. Reason : Insectivorous plants cannot prepare their own food.	1
12	Assertion : Legumes fix nitrogen in the soil. Reason: They contain rhizobium in their root nodules.	1
13	Assertion : Chlorophyll is present only in leaves and food is prepared only on leaves. Reason: Green stem contains chlorophyll and photosynthesis takes place in such stems.	1
14	Assertion : Cuscuta is a parasite. Reason: Cuscuta is devoid of chlorophyll.	1
15	Assertion : Chlorophyll converts light energy to chemical energy. Reason: Sun is the ultimate source of energy.	1

<b>SECTION – B (2 MARKS)</b>		
<b>16</b>	Identify 1,2,3 &4(raw materials for photosynthesis ) <div style="text-align: center;">  </div>	<b>2</b>
<b>17</b>	What are lichens? Mention the role of each organism in its symbiotic relationship .	<b>2</b>
<b>SECTION – C(3 MARKS)</b>		
<b>18</b>	Meenu found some fluffy white patches on her leather bag only during rainy season and not in other seasons. Help Meenu to find the reason.	<b>3</b>
<b>19</b>	Alen’s father who is a farmer planted some pea plants between main crop cultivation. Alen wants to know the reason . Help him in that regard.	<b>3</b>
<b>C C T SOURCES BASED/CASE BASED</b>		
<b>20</b>	The basic types of nutrition are plants <ol style="list-style-type: none"> <li>1. Autotrophic Nutrition: Organisms which obtain nutrition by preparing their food from simple inorganic substances are called autotrophic. They take sunlight along with carbon dioxide (from the air), and water in the soil to manufacture glucose and oxygen. The green pigment, chlorophyll in the leaves traps sunlight.</li> <li>2. Heterotrophic Nutrition: Heterotrophic Nutrition: Heterotrophic nutrition is the mode of nutrition in which organisms obtain ready made organic food by depending upon other organisms.</li> </ol> <ol style="list-style-type: none"> <li>1. How does Chlorophyll take part in Photosynthesis?</li> <li>2. Why heterotrophic organisms cannot prepare their own food? Does it mean that they never depend upon plants for their survival?</li> <li>3. Can we include the nutrition of insectivorous plants in heterotrophic nutrition?</li> </ol>	<b>4</b>
<b>21</b>	The process where green plants convert solar energy into chemical energy is known as photosynthesis. Inorganic molecules like carbon dioxide and water are used to synthesize food like starch. The process starts off with the trapping of sunlight which is done by the chlorophyll present in green plants. Raw materials such as water and carbon dioxide are the prime ingredients for photosynthesis. Water is absorbed from the soil and carbon dioxide is taken from the atmosphere. The sunlight is the catalyst here in this process which converts the carbon dioxide and water into starch and oxygen. Starch is used up by the plant whereas the oxygen is left out to the atmosphere for other organisms to utilize.	<b>4</b>



	<p>Carbon di oxide is a main ingredient for photosynthesis. How it is absorbed by plants?</p> <p>How food is prepared in plants that are not green in colour?</p> <p>What are the consequences if the process photosynthesis is not there?</p>	
<p>22</p>	<p>Saprotrophic nutrition is the nutrition in which the animal eat dead and decaying matter</p> <div data-bbox="309 562 865 943" data-label="Image"> </div> <p>a) Why mushrooms are called saprotrophs?  b) Can we call bread mould as a parasite?  C) Give two examples of saprophytes other then which is shown in the picture,</p>	<p>4</p>
<p><b>LONG ANSWER TYPE(5 MARKS)</b></p>		
<p>23</p>	<p>Parvathi found that her indoor plant dried up when she came after one month back to her house. She also found that the doors and windows (wooden) were closed when she left the house. Her mother said that absence of light killed the plant. With the help of her science teacher she did an experiment to prove the sunlight is essential for photosynthesis.</p> <div data-bbox="296 1323 810 1715" data-label="Image"> </div> <p>a. Why the plant is kept in dark for three days in the beginning of the experiment?  b. How the black strip of paper help in this experiment?  c. If we replace black strip of paper with a transparent sheet of paper, how it affects our result?</p>	<p>5</p>

24	<p>Ajit was surprised to see a plant growing on a tree. His teacher explained him about parasitic plants that they obtain all or part of its nutrition from another plant (the host) without giving any benefit to the host and sometimes causing extreme damage to the host.</p>  <p>a. The picture shows a parasitic plant which is green in colour and can perform photosynthesis. Then why it is parasitic in nature?  b. Bread mould grows on bread but is not parasitic in nature. Why?  c. Give one example of a common parasitic plant.</p>	5
25	<p>3. Stomata are openings in between guard cells that allow plants to exchange gases, such as carbon dioxide and water vapor, with their outside environment. Stomata in plants are found on plant leaves, usually on the underside of the leaves.</p> <p>a) What is the role of guard cells?  b) What if more stomata are present on the upper side of the leaves?  C) Is there any difference between the position of stomata in water plants and land plants?</p>	5

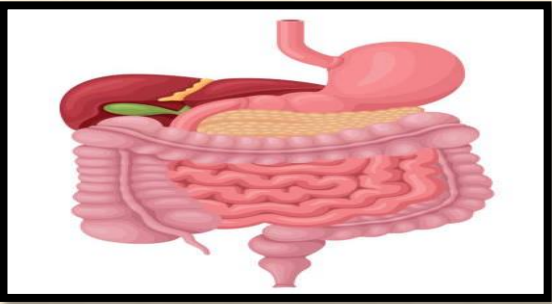
### ANSWERS CHAPTER- NUTRITION IN PLANTS

S.NO	SECTION -A (MCQ)	POINT VALUE
1	c. warm and dry	1
2	a. Sunny	1
3	c. Cuscuta	1
4	b. It captures light energy	1
5	b. Stomata	1
6	a. Saprotrophic.	1
7	c. CO <sub>2</sub> & water	1
8	b. Solar	1
9	d. Rhizobium	1
10	a. Mushroom	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	A is true but R is false	1
12	Both A and R are true and R is the correct explanation of A.	1
13	A is false but R is true.	1

14	Both A and R are true and R is the correct explanation of A.	1
15	Both A and R are true but R is not the correct explanation of A	1
<b>SECTION – B (2 MARKS)</b>		
16	1. Sunlight 2. Air 3. Water 4. Oxygen      ½ mark each	1/2x4
17	Lichens are the symbiotic association between algae and fungi. Fungi provides shelter and nutrients to algae and it in turn prepares food for fungi.	1+1
<b>SECTION – C(3 MARKS)</b>		
18	It is because of the growth of fungus. They grow on moist surfaces. The atmosphere is dry and hot during all other seasons, which is not suitable for the growth of fungi.	2+1
19	Pea plant is a leguminous plant. Leguminous plants have nodes in their roots where the nitrogen-fixing microbes are present. These microbes help by converting atmospheric nitrogen to its absorbable compounds. Plants can easily utilize them.	3
<b>C C T SOURCES BASED/CASE BASED</b>		
20	1. Chlorophyll captures light energy from sun. 2. They do not contain chlorophyll in them. No, they depend on plants I directly. 3. Yes. They are partial heterotrophs.	1+1+2
21	a. CO <sub>2</sub> is absorbed through stomata from atmosphere. b. Non-green plants also contain chlorophyll, but will be masked by other color pigments. Chlorophyll present in them helps in photosynthesis to prepare food. c. It will affect the entire life on the earth as O <sub>2</sub> will not be produced and amount of CO <sub>2</sub> will get increased.	1+1+2
22	a) Mushrooms grow on dead and decaying plants and takes nourishment from that. b) As bread is not a living organism, we cannot call bread mould as a parasite. c) Mushroom, yeast	1+1+2
<b>LONG ANSWER TYPE(5 MARKS)</b>		
23	a. For the complete usage of starch already produced. b. Black strip of paper will not allow sunlight to pass through . c. Transparent sheet allows light to pass through and we cannot find the difference.	2+1+2
24	a. They are partial parasites which can conduct photosynthesis and for some other nutrients they depend upon host plant, like water and minerals. b. Bread is not a living organism. c. Cuscuta.	2+2+1
25	Guard cells protect the stomatal pore and help in the opening and closing of stomata. b. As stomata are exposed to sunlight, transpiration rate will increase that results in excess water removal. c. In water plants, stomata are present more on the upper side of the leaves but in land plants more stomata are present on the lower side of the leaves.	1+2+2

## CHAPTER - NUTRITION IN ANIMALS

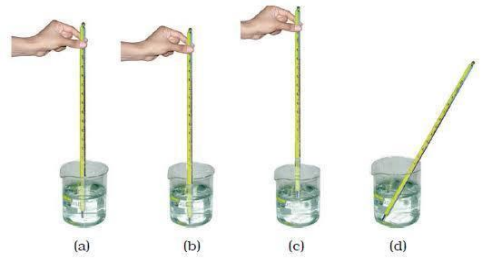
	Question	Value point
	<b>Multiple choice questions.</b>	
1	The enzyme present in the saliva converts a) Starch into simple sugars b) Fats into fatty acids c) proteins into amino acids d) protein into complex sugars	1
2	In an adult human the ratio of 4 sets of teeth are a) 2 1 2 3 b) 2 1 3 2 c) 2 2 1 3 d) 2 2 3 1	1
3	In lice _____ mode of feeding is seen. a) Capturing    b) sticking    c) sucking    d) scraping	1
4	The bile juice is stored in a) liver b) stomach c) small intestine d) gall bladder	1
5	The false feet of Amoeba are used for a) movement and capture of food b) exchange of gases c) movements only d) Capture of food only	1
6	Given below are some food items. i. Boiled and mashed rice ii. Boiled rice which is chewed iii. A slice of bread iv. yolk of egg Which of the above will give blue-black colour when tested with iodine? a) i and ii    b) i and iii    c) ii and iii    d) ii and iv	1
7	The finger like outgrowths of human intestine help to a) absorb undigested food b) absorb only fatty acids c) absorb digested food d) absorb only amino acids	1
8	The swallowed food moves downwards and reaches to stomach because of a) gravitation pull b) the flow of water in the food c) the movements of food pipe d) force of the tongue	1
9	Find the correct sequence of the processes of nutrition- a) ingestion, absorption, digestion, assimilation, egestion b) ingestion, digestion, assimilation, absorption, egestion c) ingestion, digestion, absorption, assimilation, egestion d) ingestion, absorption, assimilation, digestion, egestion	1
10	Which of the following pairs of teeth differ in structure but are similar in function? a) incisors and canines b) canines and pre molars c) canines and molars d) molars and pre molars	

<b>SHORT ANSWER TYPE - I QUESTIONS</b>																		
11	<p>Label the following parts and name them in the figure :</p> <p>i) The organ where Gastric glands are seen</p> <p>ii) The largest gland in our body</p> <p>iii) The organ where water is absorbed from the undigested material</p> <p>iv) The organ where absorption takes place.</p>		2															
12	<p>Grass eating animals graze the grass in a speedy way and after reaching to the sheds they bring back to mouth to chew it. Why do they do it? What is the process called ?</p>		2															
<b>SHORT ANSWER QUESTIONS</b>																		
13	<p>Match the following columns.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"><b>Column A</b></td> <td style="width: 50%; vertical-align: top;"><b>Column B</b></td> </tr> <tr> <td>a.Pseudopodia</td> <td>ii) fatty acids</td> </tr> <tr> <td>i) heterotrophs</td> <td>iii) digestion of cellulose</td> </tr> <tr> <td>b.Ruminants</td> <td>iv) tongue</td> </tr> <tr> <td>c. Rectum</td> <td>v) false feet</td> </tr> <tr> <td>d.Fats</td> <td>vi) faeces</td> </tr> <tr> <td>e. Animals</td> <td>vii) amino acids</td> </tr> <tr> <td>f. Taste buds</td> <td></td> </tr> </table>	<b>Column A</b>	<b>Column B</b>	a.Pseudopodia	ii) fatty acids	i) heterotrophs	iii) digestion of cellulose	b.Ruminants	iv) tongue	c. Rectum	v) false feet	d.Fats	vi) faeces	e. Animals	vii) amino acids	f. Taste buds		3
<b>Column A</b>	<b>Column B</b>																	
a.Pseudopodia	ii) fatty acids																	
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c. Rectum	v) false feet																	
d.Fats	vi) faeces																	
e. Animals	vii) amino acids																	
f. Taste buds																		
14	<p>Write the three components secreted by the inner walls of the stomach and their functions ?</p>		3															
<b>LONG ANSWER TYPE QUESTIONS</b>																		
15	<p>Explain how carbohydrates and fats are digested in humans digestive system?</p>		5															
16	<p>Where do you find Villi in our digestive system? And how do they help us?</p>		5															
17	<p>A) Choose the correct odd one out from each group and give reasons. 3 M</p> <p>i) stomach,pancreas,liver and salivary glands</p> <p>ii) salivary glands, liver, starch, gall bladder</p> <p>iii) oesophagus,rectum,large intestine and small intestine</p> <p>B) What is the complete digested form of i) Fats and ii) Proteins</p>		5															
<b>KEY FOR NUTRITION IN ANIMALS</b>																		
<b>MCQ</b>																		
1A	2. A	3 .C	4 .D	5 .A	1*10													
6. B	7. C	8. C	9. C	10. D														
<b>SHORT ANSWER TYPE -I</b>																		
11	<p>i.Stomach</p> <p>ii. Liver</p> <p>iii. Large intestine</p> <p>iv. Small intestine</p>		½*4															
12	<p>Grass eating animals quickly swallow the grass and is stored in rumen where it is partially digested forming cud. But later the cud returns to the mouth in small</p>		2M															

	lumps and the animal chews it. That is why they are also known as ruminants and the process is called rumination.	
13	Matcing i. heterotrophs – e) animals ii. fatty acids - d) fats iii. digestion of cellulose – b) ruminants iv. tongue - f) taste buds v. false feet - a) pseudopodia vi. faeces - c) rectum	½*6
14	i. Hydrochloric acid: It kills many bacteria that enter along with the food and makes the food acidic and helps the digestive juices to act. ii. Gastric (digestive) juice: Which helps to change proteins into simpler substances. iii. Mucus: It protects the inner lining of stomach.	1*3
15	Digestion of Carbohydrates: a) The saliva breaks down the starch into sugars. b) The juices from Pancreas and intestinal glands complete the digestion of carbohydrates. c) Digestion of fats: The bile juice from liver, the juice from pancreas and the juice from intestine complete the digestion of fats.	5M
16	The inner walls of the small intestine have a very large number of finger-like outgrowths known as villi. The villi enlarge the surface area for absorption of the digested food. Each villus has a network of thin and small blood vessels close to its surface. The surface of the villi absorbs the digested food stuff.	5M
17	A) i. Stomach: other are digestive glands but it's an organ. B) ii. Starch: It's a kind of food, but others help in digestion. iii. Small intestine: Helps in digestion, but the other organs not for digestion. B. The completely digested form of fats are fatty acids and proteins are Amino acids.	3M  2M

## CHAPTER - HEAT

S.NO	QUESTION	POINT VALUE
<b>SECTION - A (MCQ)</b>		
<b>1</b>	The normal temperature of human body is – A .28°C                      B. 37°C C . 45°C                      D. 48°C	<b>1</b>
<b>2</b>	The temperature of human body is measured using which device ? A .Laboratory thermometer    B. Clinical thermometer C . Both A and B                      D. Stethoscope	<b>1</b>
<b>3</b>	If you touch the utensil while boiling milk then your hand is moved back . The transfer of heat in this case is due to- A .Conduction                      B. Convection C. Radiation                      D. Evaporation	<b>1</b>
<b>4</b>	Which of the following is an example of radiation? a) A heater warming a room b) A cup of hot coffee warming your hands c) The sun's rays warming the earth d) A fan cooling a room	<b>1</b>
<b>5</b>	Which of the following materials are not conductors? A . Aluminium                      B. Iron C . Rubber                      D. Copper	<b>1</b>
<b>6</b>	The temperature range of clinical thermometer on Fahrenheit scale is – A . 94-108                      B . 80- 100 C . 72- 98                      D. 90- 102	<b>1</b>
<b>7</b>	Heat is flows from a body at a _____ temperature to a body at a _____ temperature. A .Lower , higher                      B. Higher , Lower C .Equal , higher                      D. Higher , Equal	<b>1</b>

8	<p>The heat transfer method which doesn't require any medium is –</p> <p>A . Convection                                  B.Radition  C. Conduction                                  D. Absorption</p>	1
9	<p>Four arrangements to measure temperature of ice in beaker with laboratory thermometer are shown in Figure a, b, c and d. Which one of them shows the correct arrangement for accurate measurement of temperature ?</p> 	1
10	<p>2 litres of water having a temperature of 20°C is mixed with 2 litres of a liquid having temperature of 70°C . The temperature of mixture will be –</p> <p>A .More than 90°C                                  B . Less than 90°C  C .More than 70° C and less                          D. Less than 20°C  Than 90°C</p>	1
<p><b>ASSERTION AND REASON (1MARK)</b></p> <p><b>Question No. 11 to 15 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</b></p> <p><b>(a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion</b></p> <p><b>(b) Assertion and the Reason are correct but the reason is not the correct explanation of Assertion</b></p> <p><b>(c) Assertion is true but the Reason is false</b></p> <p><b>(d) The statement of the Assertion is false but the Reason is true.</b></p>		
11	<p>Assertion(A)-A metal spoon in a hot cup of soup becomes hot.  Reason(R)- Heat is transferred by conduction.</p>	1
12	<p>Assertion (A)- Insulating materials are used to prevent heat transfer.  Reason (R)-Insulating materials have high thermal conductivity.</p>	1



<b>13</b>	Assertion (A)- A thermos bottle is designed to keep hot drinks hot and cold drinks cold.  Reason (R)-The thermos bottle has a double-walled construction with a vacuum between the walls to reduce heat transfer.	<b>1</b>
<b>14</b>	Assertion(A)- The range of laboratory thermometer is $-10^{\circ}\text{C}$ to $110^{\circ}\text{C}$ .  Reason(R)- We should always take the reading in thermometer when mercury thread becomes steady	<b>1</b>
<b>15</b>	Assertion(A)- The sun Heat comes to us by convection.  Reason(R)- Transfer of heat from sun to us does not require any medium.	<b>1</b>
<b>SECTION – B (2 MARKS)</b>		
<b>16</b>	Why do we wear woolen clothes in winter ? Explain giving reason.	<b>2</b>
<b>17</b>	Why it is more comfortable to wear light coloured clothes in summers and dark coloured clothes in winters ?	<b>2</b>
<b>SECTION – C( 3 MARKS)</b>		
<b>18</b>	What are the three methods of heat transfer ? Explain these using suitable examples from daily life activities.	<b>3</b>
<b>19</b>	Differentiate conductors and insulators. Also classify the materials given below whether they are conductors or insulators.  Silver, wood, rubber, gold..	<b>3</b>
<b>CCT SOURCES BASED/CASE BASED</b>		
<b>20</b>	Rahul went to visit Kashmir in winters to witness the snowfall. He and his friend took the room in a hotel to stay. One day at night the weather became very cold and Rahul was feeling too cold then his friend advised him to use two blankets instead of one .  A. Why was Rahul advised to use two blankets instead of one? Explain.  B. Will Rahul feel more or less cold now ?  C. What will happen if Rahul uses only one blanket to cover himself ?	<b>4</b>

21	<p>Priya is making tea on gas stove. She notices that after turning on the burner the water in the kettle starts to boil and convert into steam.</p> <p>A . What do we call the process of conversion of water into steam ?</p> <p>B . How does the heat of flame is reaching to the kettle?</p> <p>C .How does the water gets boiled ?</p> <p>D. What are the different kinds of heat transfer taking place here? Explain</p>	4
22	<p>Reena and her family went to visit Mumbai city. They took a hotel near the beach side . Reena noticed that all the windows of the hotel were facing towards the sea . So she wondered why is this so . When she went in the room during day she found that a cool breeze was coming from the window .</p> <p>A .Why all the windows were facing towards the sea ?</p> <p>B .Name the phenomenon taking place here.</p> <p>C .Why cool breeze was coming from the window during day? Explain.</p> <p>D. What will happen if there are no windows facing sea side ?</p>	4
<b>LONG ANSWER TYPE(5 MARKS)</b>		
23	<p>A. Which process is taking place in the below situations –</p> <ol style="list-style-type: none"> <li>1.When we sit in front of a room heater we feel it’s heat .</li> <li>2.When we place our hand just above the candle while it’s glowing we feel it’s hotness.</li> <li>3.The wax on the metal rod melts on heating the rod.</li> </ol> <p>B . Explain the phenomenon of land breeze .</p>	5
24	State the similarities and differences between clinical and laboratory thermometer .	5
25	<p>1.Give reason for the following phenomena-</p> <p>A . A car is left parked outside in sun on a hot summer day and car gets heated up .</p> <p>B . When we travel somewhere during summer we keep cool water in thermos flask.</p> <p>C. A glass of cold water is left outside on a hot day . What will happen to this water ?</p> <p>2. Two containers with black and white surface having hot water are placed in an shaded area . After 10 to 15 minutes –</p> <p>Does the temperature in both falls by same amount ? (Yes or No) and why ? Explain on the basis of understanding the activity.</p>	5

<b>S.N O</b>	<b>ANSWER KEY</b>	<b>Point Value</b>
	<b>SECTION -A (MCQ)</b>	
<b>1</b>	<b>B</b>	<b>1</b>
<b>2</b>	<b>B</b>	<b>1</b>
<b>3</b>	<b>A</b>	<b>1</b>
<b>4</b>	<b>C</b>	<b>1</b>
<b>5</b>	<b>C</b>	<b>1</b>
<b>6</b>	<b>A</b>	<b>1</b>
<b>7</b>	<b>B</b>	<b>1</b>
<b>8</b>	<b>B</b>	<b>1</b>
<b>9</b>	<b>A</b>	<b>1</b>
<b>10</b>	<b>C</b>	<b>1</b>
	<b>ASSERTION AND REASON (1MARK)</b>	
<b>11</b>	<b>A</b>	<b>1</b>
<b>12</b>	<b>C</b>	<b>1</b>
<b>13</b>	<b>A</b>	<b>1</b>
<b>14</b>	<b>B</b>	<b>1</b>
<b>15</b>	<b>D</b>	<b>1</b>
	<b>SECTION – B (2 MARKS)</b>	
<b>16</b>	We wear woolen clothes in winter because they are a good insulator and trap body heat and keep us warm.	<b>2</b>
<b>17</b>	Light-colored clothes reflect sunlight and heat, keeping the body cooler. Dark-colored clothes absorb and retain body heat, keeping us warmer.	<b>2</b>
	<b>SECTION – C(3 MARKS)</b>	
<b>18</b>	Three methods of heat transfer are- Conduction , convection and radiation. Any one example of each.	<b>1+1+1</b>

19	A conductor allows current to flow easily through it. Insulators don't allow current to flow through it. Conductors- Silver , gold Insulators- rubber wood	1+2
<b>C C T SOURCES BASED/CASE BASED</b>		
20	A.Using two blankets instead of one can be warmer because the air trapped between the blankets acts as an insulator, preventing heat from escaping: B. He will feels less cold now. C.He would have felt more cold.	2+1+1
21	A.Evaporation B. By conduction C. By convection D. Conduction- The process by which heat is transferred from the hotter end to the colder end of an object. Convection- The process of heat transfer from one part of a fluid to another part by the actual movement of the particles of the fluid is called convection.	1+1+1+1
22	A.So that due to sea breeze cool air can come inside. B. Sea breeze C. Cool breeze was coming from the window during the day due to sea breeze phenomenon taking place innwhich Cool air from the sea moves towards the land. D.There may be less ventilation in room	1+1+1+1
<b>LONG ANSWER TYPE(5 MARKS)</b>		
23	1 Radiation 2.Convection 3. Conduction  Land Breeze: At night, the water cools down more slowly than the land. So, the cool air from the land moves towards the sea.This is called the land breeze.	3+2
24	A.Both thermometers are made of glass. Each thermometer has a scale in Celsius. Each thermometer has a mercury-filled glass bulb at one end. Laboratory thermometer: Used to measure temperature in the laboratory.The temperature range is between (-10 to 110 °C)  Clinical thermometer-Used to measure the temperature of the human body. The temperature range is between (35 to 42 °C)	2.5+2.5
25	A.Radiation B.Convection C. Conduction  D.No the temperature will not fall by same amount.  Because black surface cools faster than the white surfaced container.	3+2

## CHAPTER - ACIDS, BASES AND SALTS

	QUESTION	POINT VALUE
	MCQ	
1.	Which of the following is an acidic solution?	1
	a. Soap solution	
	b. Vinegar	
	c. Baking soda solution	
	d. Ammonia solution	
2	Litmus paper turns red in:	1
	a. Acidic solution	
	b. Basic solution	
	c. Neutral solution	
	d. Salty solution	
3.	Which gas is usually produced when acids react with metals?	1
	a. Oxygen	
	b. Hydrogen	
	c. Carbon dioxide	
	d. Nitrogen	
4.	4. An example of a natural indicator is:	1
	a. Phenolphthalein	
	b. Methyl orange	
	c. Red cabbage extract	
	d. Bromothymol blue	
5.	Bases are:	1
	a. Sour in taste	
	b. Bitter in taste	
	c. Sweet in taste	
	d. Tasteless	
6	Which of the following is a property of bases?	1
	a. They turn blue litmus red	
	b. They have a pH less than 7	
	c. They feel slippery	
	d. They taste sour	
7.	When a solution turns red litmus blue, it is:	1
	a. Neutral	
	b. Acidic	
	c. Basic	
	d. Both acidic and basic	
8	The reaction between an acid and a base to form salt and water is called:	1

	a. Decomposition	
	b. Neutralization	
	c. Combustion	
	d. Displacement	
9	Baking soda is:	1
	a. Acidic	
	b. Neutral	
	c. Basic	
	d. None of these	
10	An antacid is used to:	1
	a. Neutralize stomach acid	
	b. Increase stomach acid	
	c. Promote acidity	
	d. None of these	
	Assertion-Reason Questions (Evaluating )	
11	Assertion (A): Vinegar is used in food preservation. Reason (R): Vinegar is a strong base.	1
	a. Both A and R are true and R is the correct explanation of A.	
	b. Both A and R are true but R is not the correct explanation of A.	
	c. A is true but R is false.	
	d. A is false but R is true.	
12	Assertion (A): Litmus paper is a common indicator. Reason (R): Litmus paper changes color in acidic and basic solutions.	1
	a. Both A and R are true and R is the correct explanation of A.	
	b. Both A and R are true but R is not the correct explanation of A.	
	c. A is true but R is false.	
	d. A is false but R is true.	
13	Assertion (A): Acids have a pH value less than 7. Reason (R): Acids turn blue litmus paper red.	1
	a. Both A and R are true and R is the correct explanation of A.	
	b. Both A and R are true but R is not the correct explanation of A.	
	c. A is true but R is false.	
	d. A is false but R is true.	
14	Assertion (A): All salts are neutral. Reason (R): Salts are formed by the reaction of acids and bases.	1
	a. Both A and R are true and R is the correct explanation of A.	
	b. Both A and R are true but R is not the correct explanation of A.	
	c. A is true but R is false.	
	d. A is false but R is true.	

15	Assertion (A): Lemon juice can be used to remove stains of turmeric. Reason (R): Lemon juice is basic in nature.	1
	a. Both A and R are true and R is the correct explanation of A.	
	b. Both A and R are true but R is not the correct explanation of A.	
	c. A is true but R is false.	
	d. A is false but R is true.	
16	Describe the role of acids and bases in digestion.	2
17	Explain the concept of pH scale and its importance.	2
18	Analyze the role of litmus paper and phenolphthalein as indicators in determining the pH of a solution. Explain what color changes you would expect for each indicator in acidic, neutral, and basic solutions.	3
19	.Describe an experiment using litmus paper to identify an acidic, a basic, and a neutral solution.	3
20	Riya's mother used lemon juice to remove a turmeric stain from her dress. a) Why did she use lemon juice to remove the stain? b) What happens to the stain when it is washed with soap and why? c) Explain the chemical reaction involved in removing the stain with lemon juice and soap.	4
21	Anil accidentally spilled a small amount of hydrochloric acid on his hand. a) What should Anil immediately do to neutralize the acid? b) Why is it important to neutralize the acid quickly? c) Explain the chemical reaction that occurs during the neutralization process	4
22	Ravi accidentally spills hydrochloric acid on his hand. He feels a burning sensation. a. What should be the immediate action taken? b. Explain why this action helps. c. Describe the chemical reaction that takes place when the remedy is applied.	4
23	Differentiate between acids and bases: a. Define acids and bases with two examples each. b. Explain the reaction of acids with metals and provide a balanced chemical equation for one such reaction.	5
24	Explain the following: a. What are indicators? Give two examples of natural indicators. b. Describe an experiment to test the acidic or basic nature of a solution using litmus paper.	5
25	Discuss the following concepts: a. What is neutralization? (Remembering) b. How is neutralization useful in daily life? Provide two examples. (Analyzing )	5

## CHAPTER -PHYSICAL AND CHEMICAL CHANGE

S.NO	QUESTION	MARKS
SECTION -A (MCQ)		
1	A change in which substance undergoes changes in its physical properties only- a) chemical changes b) no change c)physical change d)biological change	1
2	When we cut the Apple ,the colour of the apple turns brown after sometime because of- a) physical change b)chemical change c) no change d) biological change	1
3	When magnesium ribbon burns in candle flame ,what type of light is produced- a) red light b) yellow light c)green light d) white light	1
4	An ice which is solid , it melts and become water which is liquid , what type of change is this- a)physical change b) chemical change c)no change d) biological change	1
5	When you leave a piece of iron in open air for sometime, it acquires a film of brownish substance. this substance is called- a) acid b) base c) rust d) none of these	1
6	What is the colour of copper sulphate- a) white b)blue c) green d) yellow	1
7	For rusting- a) only moisture is required b) only air is required c) both air and moisture required d) none of these required	1
8	Which of the following change can easily be reversed- a) chemical change b) physical change c) physiological change d)biological change	1
9	Which property stays same during physical and chemical changes-	1



	a) density b) shape c) mass d) arrangement of particle	
10	Which of the following changes is accompanied by sound- a) physical changes b) chemical changes c) both d) none of these	1
ASSERTION AND REASON (1MARK)		
11	Assertion-Blue colour of copper sulphate solution changes on addition of piece of iron. Reasoning- Iron metal displaces copper metal.	1
12	Assertion- coating of iron layer on zinc metal is known as Galvanisation. Reasoning – Zinc metal is more reactive than iron.	1
13	Assertion- cutting of paper is a physical change. Reasoning- Change in shape comes under physical changes.	1
14	Assertion – Burning of magnesium ribbon is a chemical change. Reasoning – Magnesium produces green light in burning.	1
15	Assertion- stainless steel is made by mixing metals like -zinc , nickel and manganese . Reasoning- these metals prevent steel from rusting.	1
SECTION – B (2 MARKS)		
16	What are physical properties . Explain with example .	2
17	Explain chemical changes with suitable example .	2
SECTION – C(3 MARKS)		
18	What happens when vinegar is added to baking soda. How do you test which gas is produced during this reaction?	1+2
19	How can we prevent rusting of Iron . Suggest 3 methods .	3
C C T SOURCES BASED/CASE BASED		
20	Seema wants to bake vanilla cake. She followed the instructions as per the recipe. She made a batter with flour, butter, powdered sugar, milk and vanilla essence. She then added 1 tsp of baking powder to the batter and mixed them together. In a separate bowl, she took 1/2 tsp baking soda and mixed 1/2 tsp vinegar to it, the pair “foamed up”. She poured that into the batter and mixed well. She noticed bubbles in the batter and the batter looked fluffy. i) baking a cake is what type of change .( physical/chemical) ii) what is the nature of baking soda and vinegar. iii) What could be the reason of bubble formation . iv)write the products which form when vinegar is mixed with baking soda.	4
21	Radhika observed that her mother was boiling water and adding sugar in it continuously to make a sugar syrup . Next day on cooling the sugar crystals formed in the syrup that can be separated . i) on the bases of observation classify the above change. ii) explain the reason for classification of above change. iii) name some other substance which can be also obtained by boiling water.	4
22	A cleaned magnesium ribbon about 3-4 cm long is burnt using a burner by	4

	holding it with a pair of tongs and the ash so formed is collected in a watch-glass. The magnesium ribbon is kept away as far as possible from eyes. 1) What is the colour of the powder collected in a watch glass ? ii) What is the chemical name of the powder collected in a watch glass ? iii) Which type of change occurs in the above experiment ?	
	<b>LONG ANSWER TYPE(5 MARKS)</b>	
23	i) Distinguish between physical and chemical changes. ii) Classify the following into physical or chemical changes. (a) Magnetisation of an iron piece (b) Dissolution of salt in water (c) Expansion and contraction of metals	5
24	Explain i) why rusting of iron objects is faster in coastal areas than in deserts. ii) why the colour of copper sulphate changes when we add iron nail in solution.	5
25	Give reason – i) crystallisation regarded as a physical change. ii) curdling of milk is a chemical change.	5

### ANSWER -PHYSICAL AND CHEMICAL CHANGE

S.NO	ANSWER KEY	MARKS
	<b>SECTION -A (MCQ)</b>	
1	c	1
2	b	1
3	d	1
4	a	1
5	c	1
6	b	1
7	c	1
8	b	1
9	c	1
10	b	1
	<b>ASSERTION AND REASON (1MARK)</b>	
11	c	1
12	b	1
13	a	1
14	d	1
15	c	1
	<b>SECTION – B (2 MARKS)</b>	
16	Physical properties are feature of substance that may be clearly determined on the basis of appearance. Eg- shape , size , colour , state etc.	2
17		2
	<b>SECTION – C(3 MARKS)</b>	
18	Vinegar is acidic in nature and baking soda id basic in nature ,so salt is produced in this reaction along with water and CO2 gas.	3

	We will pass the gas through lime water, if lime water turns milky then it is a CO <sub>2</sub> gas.	
19	1- Galvanisation 2- oiling 3- greening	3
	<b>C C T SOURCES BASED/CASE BASED</b>	
20	i) chemical change ii) vinegar – acidic baking soda- basic iii) bubbles are formed due to CO <sub>2</sub> gas. iv) salt + water+CO <sub>2</sub> formed.	4
21	i) physical change ii) it is reversible iii) salt	4
22	i) white ii) magnesium oxide iii) chemical reaction	4
	<b>LONG ANSWER TYPE(5 MARKS)</b>	
23	i) explanation. ii)(a) Magnetisation of an iron piece is a physical change as it is a temporary change. (b) The dissolution of salt in water is the method of dissolving salt in water. It is a physical change as no new substance is formed, and the salt can be recovered by water evaporation. (c) The expansion and contraction of metal on heating and cooling are physical changes because the expansion and contraction do not cause any chemical changes in metal. Also, contraction and expansion do not produce other elements with different chemical properties.	2+3
24	i) Rusting of iron objects occurs if iron comes in contact with moist air. It is faster in coastal areas than in deserts because air contains a high percentage of moisture in coastal areas. In contrast, the air is dry and hot in the deserts. Therefore rusting is more prominent in coastal provinces than in deserts. ii) When an iron nail is dipped in copper sulphate solution, a brown coating of copper is formed on the iron surface, and the copper sulphate solution's colour changes from blue to pale green. The iron passes into the solution as ferrous, forming the ferrous sulphate solution. The reaction shows iron is more reactive than copper because it displaces copper from the copper sulphate solution.	5
25	i) Crystallisation is a physical change as it does not result in the formation of a new substance. Moreover, the change is reversible because crystals formed in the process can be reversed back to non-crystalline form by dissolving it in water. ii) Curdling of milk is a chemical change because a new substance, i.e. lactic acid, is formed. The curd has a different taste than the milk. Also, once the curd is formed, we can not restore milk from it.	5

## CHAPTER - RESPIRATION IN ORGANISMS

S.NO	QUESTION	MARKS
<b>SECTION -A (MCQ)</b>		
<b>1</b>	The normal range of breathing rate per minute in an average adult at rest is: a) 9-12 b) 15-18 c) 21-24 d) 30-33	<b>1</b>
<b>2</b>	During heavy exercise, we get cramps in the legs due to the accumulation of: a) carbon dioxide b) lactic acid c) alcohol d) water	<b>1</b>
<b>3</b>	Breathing rate increases during exercise because: a) oxygen demand is higher b) carbon dioxide production is lower c) lactic acid decreases d) ATP production stops	<b>1</b>
<b>4</b>	In the respiratory system, the exchange of gases takes place in the: a) trachea b) alveoli c) bronchi d) diaphragm	<b>1</b>
<b>5</b>	Which of the following is NOT a function of the respiratory system? a) gas exchange b) filtering air c) vocalization d) nutrient absorption	<b>1</b>
<b>6</b>	The major muscle involved in breathing is the: a) heart b) diaphragm c) liver d) stomach	<b>1</b>
<b>7</b>	Which part of the brain regulates the rate of breathing? a) cerebrum b) cerebellum c) medulla oblongata d) hypothalamus	<b>1</b>
<b>8</b>	Plants take in carbon dioxide through their: a) roots b) stems c) flowers d) leaves	<b>1</b>
<b>9</b>	During respiration, energy is released in the form of: a) ATP b) DNA c) RNA d) ADP	<b>1</b>
<b>10</b>	Which of the following organisms can perform both aerobic and anaerobic respiration? a) human b) yeast c) dog d) fish	<b>1</b>
<b>ASSERTION AND REASON (1MARK)</b>		
<b>11</b>	Assertion: During heavy exercise, we breathe faster. Reason: Muscles require more oxygen and produce more carbon dioxide. a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion. b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion. c) Assertion is correct but Reason is incorrect. d) Assertion is incorrect but Reason is correct.	<b>1</b>
<b>12</b>	Assertion: Fish can respire through their skin. Reason: Fish have a specialized respiratory system called gills. a) Both Assertion and Reason are correct and Reason is the correct explanation of	<b>1</b>

	<p>Assertion.</p> <p>b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.</p> <p>c) Assertion is correct but Reason is incorrect.</p> <p>d) Assertion is incorrect but Reason is correct.</p>	
<b>13</b>	<p>Assertion: Plants respire only during the night.</p> <p>Reason: Photosynthesis occurs only during the day.</p> <p>a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.</p> <p>b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.</p> <p>c) Assertion is correct but Reason is incorrect.</p> <p>d) Assertion is incorrect but Reason is correct.</p>	<b>1</b>
<b>14</b>	<p>Assertion: Anaerobic respiration produces more energy than aerobic respiration.</p> <p>Reason: Anaerobic respiration does not require oxygen.</p> <p>a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.</p> <p>b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.</p> <p>c) Assertion is correct but Reason is incorrect.</p> <p>d) Assertion is incorrect but Reason is correct..</p>	<b>1</b>
<b>15</b>	<p>Assertion: Insects have a highly efficient respiratory system.</p> <p>Reason: Insects have tracheal tubes that directly deliver oxygen to cells.</p> <p>a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.</p> <p>b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.</p> <p>c) Assertion is correct but Reason is incorrect.</p> <p>d) Assertion is incorrect but Reason is correct.</p>	<b>1</b>
<b>SECTION – B (2 MARKS)</b>		
<b>16</b>	Why do athletes breathe faster and deeper than usual after finishing a race?	<b>2</b>
<b>17</b>	What is the role of haemoglobin in respiration?	<b>2</b>
<b>SECTION – C(3 MARKS)</b>		
<b>18</b>	How do earthworms breathe? Explain the process in detail.	<b>3</b>
<b>19</b>	Describe the role of alveoli in the respiratory system.	<b>3</b>
<b>C C T SOURCES BASED/CASE BASED</b>		
<b>20</b>	<p>Ria noticed that when she climbed stairs, she started breathing faster and felt her heart rate increase. She wondered why this happened.</p> <p>(a) What physiological process is responsible for Ria’s increased breathing rate? (</p> <p>(b) Why does Ria’s heart rate increase along with her breathing rate?</p> <p>(c) Explain how the respiratory and circulatory systems work together to meet the body’s increased demand for oxygen during physical activity.</p>	<b>4</b>
<b>21</b>	<p>Arjun observed that his pet hamster was very active during the night but slept a lot during the day. He decided to research why his pet had such a behavior pattern.</p> <p>(a) What type of respiration does Arjun's pet hamster primarily rely on while it is</p>	<b>4</b>

	active? (b) Why might the hamster be more active at night compared to the day? (c) Compare and contrast the respiration in nocturnal animals like Arjun's hamster to diurnal animals like humans.	
<b>22</b>	During a biology class, the teacher asked the students to hold their breath for as long as they could. Sanjay managed to hold his breath the longest but felt dizzy afterward. (a) What might cause the dizziness Sanjay felt after holding his breath? (b) Explain the process that occurs in the body when someone holds their breath. (c) Discuss the role of carbon dioxide build up in triggering the urge to breathe and its impact on the body's pH levels.	<b>4</b>
<b>LONG ANSWER TYPE(5 MARKS)</b>		
<b>23</b>	(a) Describe the process of inhalation. (2 marks) (b) Explain how the diaphragm and rib cage work together during respiration.	<b>5</b>
<b>24</b>	(a) What is aerobic respiration? (b) Compare aerobic and anaerobic respiration in terms of energy yield and end products.	<b>5</b>
<b>25</b>	(a) Why do we respire? (b) Explain how respiration in plants is different from respiration in animals.	<b>5</b>

**ANSWER- RESPIRATION IN ORGANISMS**

<b>S.NO</b>	<b>ANSWER KEY</b>	<b>MARKS</b>
<b>SECTION -A (MCQ)</b>		
<b>1</b>	b) 15-18	<b>1</b>
<b>2</b>	b) lactic acid	<b>1</b>
<b>3</b>	a) oxygen demand is higher	<b>1</b>
<b>4</b>	b) alveoli	<b>1</b>
<b>5</b>	d) nutrient absorption	<b>1</b>
<b>6</b>	b) diaphragm	<b>1</b>
<b>7</b>	c) medulla oblongata	<b>1</b>
<b>8</b>	d) leaves	<b>1</b>
<b>9</b>	a) ATP	<b>1</b>
<b>10</b>	b) yeast	<b>1</b>
<b>ASSERTION AND REASON (1MARK)</b>		
<b>11</b>	a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.	<b>1</b>

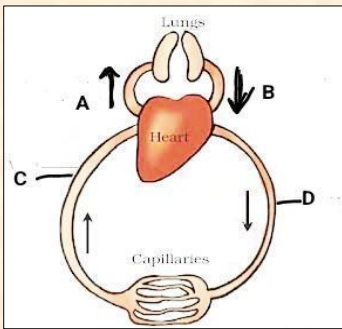
12	d) Assertion is incorrect but Reason is correct.	1
13	d) Assertion is incorrect but Reason is correct.	1
14	c) Assertion is correct but Reason is incorrect.	1
15	a) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.	1
<b>SECTION – B (2 MARKS)</b>		
16	After a race, athletes breathe faster and deeper to meet the increased oxygen demand and to expel the accumulated carbon dioxide and lactic acid from their muscles.	2
17	Haemoglobin is a protein in red blood cells that binds to oxygen in the lungs and transports it to the tissues. It also helps in transporting carbon dioxide from the tissues back to the lungs for exhalation.	2
<b>SECTION – C(3 MARKS)</b>		
18	Earthworms breathe through their skin. Their skin is thin and moist, allowing oxygen to diffuse directly into their blood vessels and carbon dioxide to diffuse out. They require a moist environment to facilitate this gas exchange.	3
19	Alveoli are tiny air sacs in the lungs where gas exchange occurs. They have thin walls and are surrounded by capillaries. Oxygen from inhaled air diffuses through the alveolar walls into the blood, while carbon dioxide diffuses from the blood into the alveoli to be exhaled.	3
<b>C C T SOURCES BASED/CASE BASED</b>		
20	(a) The physiological process responsible for Ria’s increased breathing rate is increased metabolic activity due to physical exertion. (b) Ria’s heart rate increases to pump more oxygen-rich blood to the muscles and remove carbon dioxide and other metabolic wastes more efficiently. (c) During physical activity, the respiratory system increases oxygen intake and expels carbon dioxide more rapidly, while the circulatory system accelerates the delivery of oxygen to tissues and the removal of waste products. This coordination ensures that the body’s cells receive enough oxygen to meet increased energy demands.	1+1+2
21	(a) Arjun's pet hamster primarily relies on aerobic respiration while it is active. (b) The hamster might be more active at night because it is a nocturnal animal, which means it has evolved to be more active during the night to avoid predators and seek food. (c) Nocturnal animals like Arjun's hamster have adaptations for nighttime activity, such as enhanced night vision and a different sleep-wake cycle. In contrast, diurnal animals like humans are active during the day and rest at night. Both types of animals rely on aerobic respiration for energy, but their activity patterns are adapted to their ecological niches.	1+1+2
22	(a) The dizziness Sanjay felt after holding his breath might be caused by a	1+1+2

	<p>temporary lack of oxygen and an increase in carbon dioxide in the blood.</p> <p>(b) When someone holds their breath, the body continues to produce carbon dioxide while consuming oxygen. The build up of carbon dioxide in the blood leads to an increased urge to breathe.</p> <p>(c) Carbon dioxide buildup triggers the urge to breathe by lowering blood pH levels, making the blood more acidic. The brain detects this change and signals the body to resume breathing to restore normal pH levels and maintain homeostasis.</p>	
	<b>LONG ANSWER TYPE(5 MARKS)</b>	
<b>23</b>	<p>(a) Inhalation is the process of taking in air rich in oxygen into the lungs. It involves the contraction of the diaphragm and the external intercostal muscles, increasing the thoracic cavity volume.</p> <p>(b) The diaphragm contracts and flattens, while the rib cage moves up and out, creating a vacuum that draws air into the lungs. During exhalation, the diaphragm relaxes and moves upward, and the rib cage moves down and in, pushing air out.</p>	<b>2+3</b>
<b>24</b>	<p>(a) Aerobic respiration is the process of producing cellular energy involving oxygen. Cells break down food in the mitochondria in a long, multistep process that produces roughly 36 ATP.</p> <p>(b) Aerobic respiration yields more energy (36 ATP per glucose) and produces carbon dioxide and water as end products. Anaerobic respiration yields less energy (2 ATP per glucose) and produces lactic acid (in muscles) or ethanol and carbon dioxide (in yeast) as end products.</p>	<b>2+3</b>
<b>25</b>	<p>(a) We respire to supply our cells with oxygen, which is necessary for the production of ATP (energy). Respiration also helps remove carbon dioxide, a waste product of cellular metabolism.</p> <p>(b) In plants, respiration occurs throughout the day and night, where oxygen is used to break down glucose into carbon dioxide, water, and energy. In animals, respiration is more complex and involves specialized organs like lungs or gills to intake oxygen and release carbon dioxide.</p>	<b>2+3</b>



## CHAPTER- TRANSPORTATION IN ANIMALS AND PLANTS

S.NO	QUESTION	POINT VALU E
<b>SECTION - A (MCQ)</b>		
<b>1</b>	The gas which we remove from our body as a waste is – A. Carbon dioxide                      B. Oxygen C. Nitrogen                                      D. Both B and C	<b>1</b>
<b>2</b>	Which type of cells fight against the germs that enter our body ? A. White blood cells              B. Platelets C. Red blood cells              D. B and C both	<b>1</b>
<b>3</b>	_____ is the range of normal heart beat per minute in a human being. A.72 to 90                                      C. 72 to 80 B.70 to 88                                      D. 68 to 72	<b>1</b>
<b>4</b>	When we go to a doctor he / she checks our heart beat using an instrument . It is - A.Microscope B.Stethoscope C .Barometer                                      D. Thermometer	<b>1</b>
<b>5</b>	What is the role of haemoglobin in the blood ? A To carry out CO <sub>2</sub> from body cells to lungs B. To perform clotting. C. To carry O <sub>2</sub> from lungs to body cells. D. To clean the blood of body.	<b>1</b>
<b>6</b>	From kidneys the urine goes into _____ through _____ which is a tube like structure . A Urethra , ureters.                                      B Urinary bladder , Ureters C Ureters , Urinary bladder                                      D Ureters , Urethra.	<b>1</b>
<b>7</b>	An adult human being normally passes about how many litres of urine in 24 hours ? A. 2 to 2.5L                                      B. 1 to 1.8L C. 1 to 2.2L                                      D. 2 to 3L	<b>1</b>
<b>8</b>	AO1 The process by which plants loose their water through stomata is called _____. A. Respiration                      C Transpiration B.Photosynthesis                      D. Evaporation	<b>1</b>
<b>9</b>	The cells in our body which contain haemoglobin pigment are - A. White blood cells              B. Red blood cells C. Platelets                                      D. Plasma	<b>1</b>
<b>10</b>	Select the odd one out - A. Arteries                      B. Veins                      C Xylem                      D. Capillaries	<b>1</b>

<b>ASSERTION AND REASON (1MARK)</b>		
<p>Question No. 11 to 15 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:</p> <p>(a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion</p> <p>(b) Assertion and the Reason are correct but the reason is not the correct explanation of Assertion</p> <p>(c) Assertion is true but the Reason is false</p> <p>(d) The statement of the Assertion is false but the Reason is true.</p>		
<b>11</b>	<p>A – Plants absorb water and minerals by roots.</p> <p>R- Roots have root hairs which increase the surface area of root for absorption of water and minerals.</p>	<b>1</b>
<b>12</b>	<p>A – Heart pumps blood throughout the body.</p> <p>R – The heart acts as a muscular pump generating pressure to circulate blood through arteries , veins and capillaries.</p>	<b>1</b>
<b>13</b>	<p>A – Xylem transports water in a plant.</p> <p>R- The water is transported by xylem from leaves to all the other parts of the plant where it is required.</p>	<b>1</b>
<b>14</b>	<p>A – Arteries carry deoxygenated blood from lungs to the heart.</p> <p>B – Pulmonary artery transfers deoxygenated blood from heart to lungs.</p>	<b>1</b>
<b>15</b>	<p>A – Animals such as sponges and hydra do not have a circulatory system.</p> <p>R – They have blood which is present as a fluid.</p>	<b>1</b>
<b>SECTION – B (2 MARKS)</b>		
<b>16</b>	<p>During summer season sometimes white patches are formed on our clothes , especially in areas like underarms . Can you explain why does it happen?</p>	<b>2</b>
<b>17</b>	<p>What is blood ? Write the names of different components of blood.</p>	<b>2</b>
<b>SECTION – C( 3 MARKS)</b>		
<b>18</b>	<div style="text-align: center;">  </div> <p>A. Label the parts A B C and D.</p> <p>B. The above diagram is related to which system in our body?</p>	<b>3</b>

<p><b>19</b></p>	<p>Answer the following questions-</p> <p>A. What is excretion ?</p> <p>B. The removal of CO<sub>2</sub> from our body is excretion process . (True/False)</p> <p>C. Write about the role of kidney in excretion process</p>	<p><b>3</b></p>
<p><b>CCT SOURCES BASED/CASE BASED</b></p>		
<p><b>20</b></p>	<p>.A farmer notices that the leaves of his plants are turning yellow and wilted, despite regular watering. He wonders why this is happening.</p> <p>1. What could be the reason for the yellowing of leaves?</p> <p>2. How do plants transport water and minerals from the roots to the leaves?</p> <p>3. What is the role of phloem in plant transport?</p> <p>4. How can the farmer solve this problem ?</p>	<p><b>4</b></p>
<p><b>21</b></p>	<p>Mayank , a 14-year-old boy, loves playing football . During a match, he felt tired and dizzy after running for a short while. His coach advised him to drink water and rest for a bit. Later, Rohan's parents took him to a doctor, who checked his heartbeat and said it was normal. The doctor explained that Rohan's heart was working harder to supply oxygen to his muscles during the game.</p> <p>1. Why did Mayank feel tired and dizzy during the match?</p> <p>2. What was the doctor checking when he listened to Mayank’s heartbeat?</p> <p>3. Why does the heart work harder during physical activities ?</p> <p>4. How does the heart supply oxygen to muscles ?</p>	<p><b>4</b></p>
<p><b>22</b></p>	<p>A child was playing and suddenly he fell down. After falling he got hurt and blood began to come out. After some time the child noticed that there is formation of a red hard substance on that wound due to which bleeding stopped.</p> <p>A . This brownish substance is formed by the help of which cells ?</p> <p>B . What do we call this brownish substance?</p> <p>C . What will happen if blood lacks these cells ?</p> <p>D. What is its color?</p>	<p><b>4</b></p>
<p><b>LONG ANSWER TYPE(5 MARKS)</b></p>		
<p><b>23</b></p>	<p>Answer the following questions</p> <p>A . What are the differences between transportation of materials in plants and animals?</p> <p>B . Xylem and phloem in plants are collectively known as_____ tissues.</p> <p>C . Draw the diagram of excretory system of humans any label any 2 parts .</p>	<p><b>5</b></p>

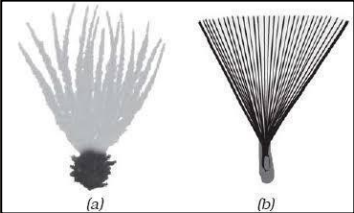
24	<p>Answer the following questions-</p> <p>A . Write the main difference between arteries and veins .</p> <p>B . Human heart has how many chambers? Name the two upper and two lower chambers of heart.</p> <p>C . Why there is a partition between the chambers of heart ?</p> <p>D . Arteries divide further to form _____.</p>	5
25	<p>Answer the following-</p> <p>A . Describe the structure and function of heart .</p> <p>OR</p> <p>What is the need of transportation of materials in animals and plants ?</p> <p>B. Water in plants can be pulled to reach greater heights due to _____.</p>	5

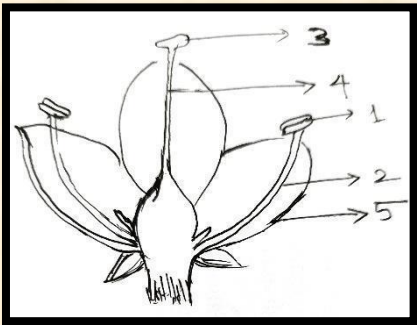
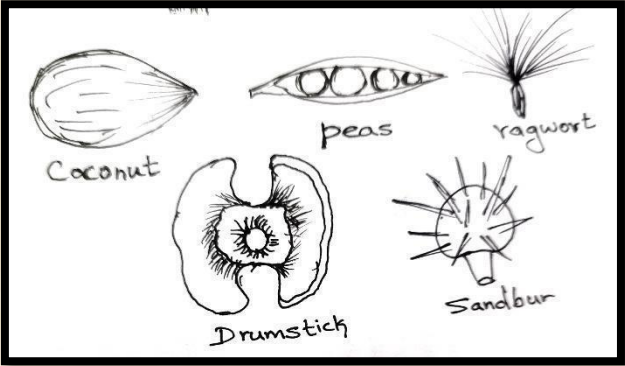
### ANSWERS- TRANSPORTATION IN ANIMALS AND PLANTS

S.N O	ANSWER KEY	Point Value
<b>SECTION -A (MCQ)</b>		
1	A	1
2	A	1
3	C	1
4	B	1
5	C	1
6	C	1
7	B	1
8	C	1
9	B	1
10	C	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	A	1
12	A	1
13	A	1
14	C	1
15	A	1
<b>SECTION – B (2 MARKS)</b>		
16	Sweat contains water and salts. The water of sweat evaporates, leaving behind the salts which appear as white patches on our clothes.	2

17	Blood is the fluid connective tissue. The components of blood are – Red blood cells, water blood cells, 88iùií and plasma.	1+1
<b>SECTION – C(3 MARKS)</b>		
18	(A)A- Pulmonary artery, B- Pulmonary vein C- Vein D-Artery (B) Circulatory system	2+1
19	A.The process of removing waste from our body is called excretion. B.True C.Kidneys help in eliminating waste materials from our body.	1+1+1
<b>C C T SOURCES BASED/CASE BASED</b>		
20	A. Water and minerals not reaching to the plant properly. B .Through xylem C. Phloem transports food. D. By ensuring supply of water and minerals to plant at regular intervals.	1+1+1 +1
21	A. Because during playing more amount of oxygen is needed by blood which was not reaching properly to cells. B. To monitor heart rate (beats per minute) C.Muscles require more oxygen. D.Pumping oxygenated blood	1+1+1 +1
22	A.Platelets B. Clot C. If blood lacks these cells there will be no formation of clot. D. Red	1+1+1 +1
<b>LONG ANSWER TYPE(5 MARKS)</b>		
23	A.The food has to be transported to all parts of the plant. This is done by the vascular tissue called the phloem. Thus, xylem and phloem transport substances in plants. In most animals the blood that circulates in the body distributes food and oxygen to different cells of the body. B.Vascular tissues C . Diagram with labeling any two parts	2+1+2
24	A.Arteries carry blood away from the heart, and veins carry blood towards the heart. B. 4 chambers Atrium and ventricles C. So that oxygenated blood and deoxygenated blood doesn't get mixed. D.Capillaries.	1+2+1 +1
25	A.The heart is an organ which beats continuously to act as a pump for the transport of blood, which carries other substances with it. The heart pumps the deoxygenated blood to the lungs for oxygenation and receives oxygenated blood from lungs. It pumps the oxygenated blood to different parts of the body OR The transport of materials is important in a plant or in an animal, because their cells, which is the basic unit of life, require a constant supply of nutrients, oxygen, and water for the production of energy and its release during respiration. The cells need nutrients and oxygen for their metabolic processes. Also, transportation is needed to carry away the waste products produced by the cells due to their metabolic activities. B. Transpiration pull	4+1

## CHAPTER - REPRODUCTION IN PLANTS

	MCQ	Value points
1	<p>A farmer had a red rose plant which gave many beautiful flowers every year. When his granddaughter visited him she wanted to have the same type of rose plant in her garden. Which method should she choose to obtain a similar plant?</p> <p>a) Grafting b) Sexual reproduction c) Cutting d) Binary fission</p>	1
2	<p>Paheli sowed seeds of watermelon in her garden to grow a new plant. Which mode of reproduction did she choose to obtain a watermelon?</p> <p>a) Vegetative propagation b) Sexual reproduction c) Asexual reproduction d) Spore formation</p>	1
3	<p>Shyla saw small buds arising from potatoes in her kitchen. She took the potato to her science teacher and asked what kind of reproduction has taken place in this potato?</p> <p>a) Vegetative propagation b) Budding c) Binary fission d) Spore formation</p>	1
4	<p>What are the characteristics of the seeds given below and by which mode these seeds will be dispersed?</p> <div style="text-align: center;">  </div> <p>a) Light weight, spiny, seed dispersal – water b) Light weight, winged, seed dispersal – air c) Heavy, winged, seed dispersal – air d) Heavy, spiny, seed dispersal - animals</p>	1
5	<p>Teacher told the students that the fruit arises in place of a flower after the wilting of petals. Ravi was wondering which part of this flower will become a fruit and a seed? Which part of a flower becomes future fruit and seed? Identify the future fruit and seeds to help Ravi.</p>	1

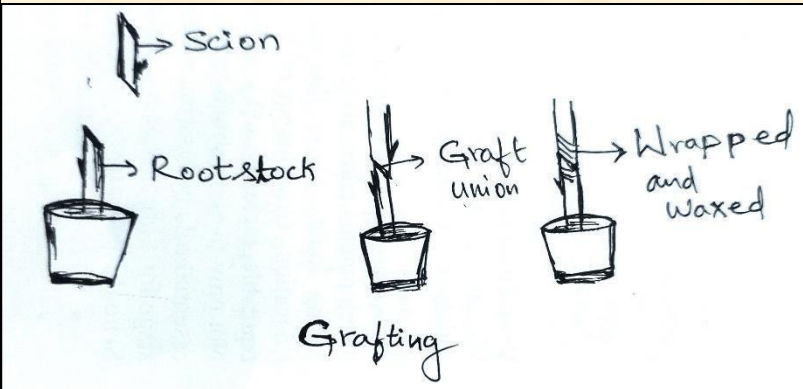
	<p>a) Future fruit – ovary, future seed – ovule  b) Future fruit – ovule, future seed – ovary  c) Future fruit – pistil, future seed – pollen  d) Future fruit – pollen, future seed – pistil</p>	
6	<p>Raju playfully removed sepals from the bud thinking it's of no use his teacher taught him that it plays a vital role in the development of a flower. What is the importance of sepals in a flower?</p> <p>a) It nourishes the developing flower  b) It protects the developing flower  c) It produces pollen grains  d) It helps in pollination</p>	1
7	<p>A teacher asked a student to identify the label where pollen grain lands on a flower for fertilization. Which label should the student choose?</p>  <p>a) 2  b) 4  c) 1  d) 3</p>	1
8	<p>The picture given below shows seeds of different plants.</p>  <p>Seeds of which plant have features to disperse better in water than seeds of other plants?</p> <p>a. Coconut    b. Peas    c. Ragwort    d. Sandbur</p>	1

9	<p><b>Which of the following is a result of fertilization in flowering plants?</b></p> <p>a. Formation of pollen grains b. Production of nectar c. Development of fruit d. Growth of roots</p>	1																				
10	<p>Teacher set up an experiment to find the suitable conditions for yeast reproduction. The different conditions are shown in the table below</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Conditions</th> <th style="width: 20%;">Set A</th> <th style="width: 20%;">Set B</th> <th style="width: 20%;">Set C</th> <th style="width: 15%;">Set D</th> </tr> </thead> <tbody> <tr> <td>Water</td> <td>Absent</td> <td>Present</td> <td>Absent</td> <td>Present</td> </tr> <tr> <td>Sugar</td> <td>Present</td> <td>Absent</td> <td>Absent</td> <td>Present</td> </tr> <tr> <td>Temperature</td> <td>Warm</td> <td>Cold</td> <td>Cold</td> <td>Warm</td> </tr> </tbody> </table> <p>The teacher observed the sets under a microscope. Under which set up the teacher can find the formation of new yeast cells? a) Set A    b)Set B    c)Set C    d)Set D</p>	Conditions	Set A	Set B	Set C	Set D	Water	Absent	Present	Absent	Present	Sugar	Present	Absent	Absent	Present	Temperature	Warm	Cold	Cold	Warm	1
Conditions	Set A	Set B	Set C	Set D																		
Water	Absent	Present	Absent	Present																		
Sugar	Present	Absent	Absent	Present																		
Temperature	Warm	Cold	Cold	Warm																		
<b>Assertion and reasoning</b>																						
11	<p><b>Assertion (A):</b> Vegetative propagation produces genetically identical plants. <b>Reason (R):</b> Vegetative propagation involves the formation of gametes.</p>																					
12	<p><b>Assertion (A):</b> Pollination is necessary for the fertilization of flowers. <b>Reason (R):</b> Pollination involves the transfer of pollen from the anther to the stigma.</p>																					
13	<p><b>Assertion (A):</b> Alga covers a large area in a short period of time. <b>Reason (R):</b>Alage grow and multiply rapidly by fragmentation.</p>																					
14	<p>14. <b>Assertion (A):</b> Papaya produces unisexual flowers. <b>Reason (R):</b> Unisexual flowers contain either pistil or stamen.</p>																					
15	<p><b>Assertion (A):</b> Vegetative propagation is a type of asexual reproduction. <b>Reason (R):</b> In vegetative propagation new plants arise from roots, stem, leaves and flowers</p>																					



16	Analyse the Importance of pollination in the life cycle of flowering plants.	2
17	Students visited a bakery shop to observe the production of cakes and breads. They saw a person adding microorganisms to a sugar solution. They were curious about the microorganism so they took some samples and observed it under the microscope. A)Identify the microorganisms observed by the students in the bakery. b)Name the type of reproduction undergone by this microorganism.	2
18	Why seed dispersal plays a vital role in plants?	3
19	What are the advantages of vegetative propagation?	3

**C C T SOURCES BASED/CASE BASED**

20	 <p><b>Read the following paragraph and answer the following questions</b></p> <p>Grafting is a powerful tool in horticulture and agriculture, allowing for the propagation of plants with superior qualities and the preservation of genetic lines. Grafting is the joining together of plant parts by means of tissue regeneration. Grafting is the act of placing a portion of one plant (bud or scion) into or on a stem, root, or branch of another (stock) in such a way that a union will be formed and the partners will continue to grow. The part of the combination that provides the root is called the stock; the added piece is called the scion. Roses and certain ornamental trees and shrubs are often grafted to produce specific flower colors or forms.</p> <p>a. What are the main purposes of grafting in horticulture? b. A student observes two mango trees tree A and tree B of which tree A gives tasty mango but the yield is very less while tree B gives high yield but the fruit is not tasty. What method should he adopt to get a tree with high yield and tasty mango? c. Consider a horticulturist who wants to graft a disease-resistant rootstock with a high-yielding scion. What are the key factors the horticulturist should consider when selecting the scion and rootstock?</p> <p style="text-align: center;">Or</p> <p>How is grafting different from other vegetative propagation?</p>	4
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21	<p>Seeds are essential for plant reproduction, dispersal, and survival. Their unique structure enables them to protect and nourish the developing embryo, while their ability to remain dormant allows plants to thrive in various environments.</p> <p>a) After fertilization the ovary develops into.....and the other parts of the flower fall off.</p> <p>b) Winged seeds are transported to faraway places by winds is it true or false?</p> <p>c) If all seeds of the plant will fall off at the same place and grow then what would happened?</p> <p>Or</p> <p>Why is genetic diversity important in seeds, and how does it affect the survival of a plant species in changing environments?</p>	4
22	<p>Vegetative propagation is a type of asexual reproduction in plants where new individuals are produced from the vegetative parts of the plant, such as stems, roots, or leaves, rather than through seeds. This method is commonly used in horticulture and agriculture.</p> <p>a) Out of the following which two method yield genetically similar plants A. Stem cutting      B. Seed production    C. Mutation    D. Tissue culture</p> <ol style="list-style-type: none"> <li>1. A and B</li> <li>2. A and D</li> <li>3. B and C</li> <li>4. C and D</li> </ol> <p>b) Why might a farmer choose vegetative propagation over seed propagation?</p> <p>c) What are the potential risks associated with relying solely on vegetative methods?</p>	4
<b>LONG ANSWER TYPE(5 MARKS)</b>		
23	<p>23.Paheli was watering the garden, and she saw that honey bees were wandering around the flower. Her mother said that honey bees help in pollination. She was analysing how the structure of a flower aids in the process of pollination. What would be her observations?</p>	5
24	<p>24. When Bhoojo opened his tiffin box he saw that the bread was discolored. He took it to his science teacher and wanted to observe it under a microscope. He was astonished to see microorganisms.</p> <p>a. Identify the type of microorganism grown on the bread.</p> <p>b.What kind of reproduction takes place in this microorganism?</p> <p>C.Examine the role of spores in the survival of extreme conditions.</p>	5
25	<p>How does vegetative propagation contribute to the survival and spread of certain plant species in their natural habitats? Provide examples to support your explanation.</p>	5

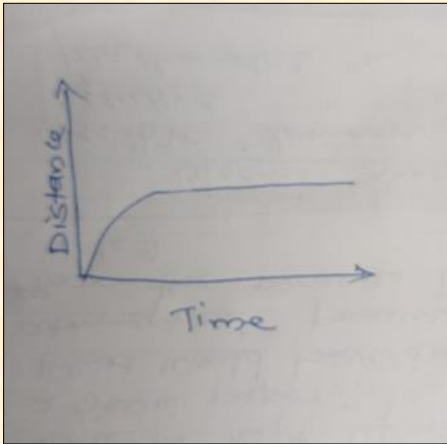
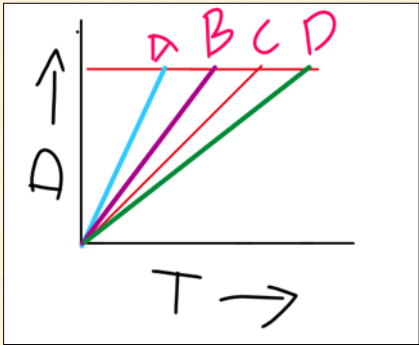
## ANSWERS-REPRODUCTION IN PLANTS

S.NO	ANSWER KEY	MARKS
<b>SECTION -A (MCQ)</b>		
<b>1</b>	C. Cutting	<b>1</b>
<b>2</b>	B. Sexual reproduction	<b>1</b>
<b>3</b>	A. Vegetative propagation	<b>1</b>
<b>4</b>	B. Light weight, winged, seed dispersal – air	<b>1</b>
<b>5</b>	A. Future fruit – ovary, future seed – ovule	<b>1</b>
<b>6</b>	b.It protects the developing flower	<b>1</b>
<b>7</b>	d. 3	<b>1</b>
<b>8</b>	a. Coconut	<b>1</b>
<b>9</b>	c. Development of fruit	<b>1</b>
<b>10</b>	d. Set D	<b>1</b>
<b>ASSERTION AND REASON (1MARK)</b>		
<b>11</b>	C	<b>1</b>
<b>12</b>	A	<b>1</b>
<b>13</b>	A	<b>1</b>
<b>14</b>	A	<b>1</b>
<b>15</b>	C	<b>1</b>
<b>SECTION – B (2 MARKS)</b>		
<b>16</b>	Pollination is the transfer of pollen from a flower's male part to its female part, which enables fertilization and the production of seeds	<b>2</b>
<b>17</b>	a. Yeast b. Budding	1 1
<b>SECTION – C(3 MARKS)</b>		
<b>18</b>	Seed dispersal is vital for enhancing genetic diversity, allowing plants to colonize new areas, and supporting the overall health of ecosystems. It ensures that plants can continue to reproduce and thrive in changing environments while playing an integral role in maintaining biodiversity and ecosystem balance.	<b>3</b>
<b>19</b>	vegetative propagation offers numerous advantages, including faster reproduction, preservation of desired traits, the ability to propagate seedless or hybrid plants, and ensuring uniformity in plant populations.	<b>3</b>
<b>C C T SOURCES BASED/CASE BASED</b>		
<b>20</b>	a) Grafting is used in horticulture for improving plant performance, enhancing disease resistance, accelerating production, propagating desirable varieties. b) Grafting c) The horticulturist must carefully consider compatibility, rootstock and scion traits, timing, balance, and long-term viability. or Grafting involves joining two different plants to combine desirable traits,	1 1 2 2

	whereas other vegetative methods typically use a single plant to create identical clones.	
<b>21</b>	<p>a) Fruit</p> <p>b) False</p> <p>c) If all the seeds of the plant fall off at the same time then it would create competition for sunlight, nutrients, water and space.</p> <p>Or</p> <p>Genetic diversity in seeds is essential for the adaptability and resilience of plant species. It allows plants to survive disease, environmental shifts, and changing climates, and plays a key role in the long-term success of ecosystems and agricultural practices. Without genetic diversity, plant populations become vulnerable to extinction,</p>	<p>1</p> <p>1</p> <p>2</p> <p>2</p>
<b>22</b>	<p>a) A and D</p> <p>b) It is a cheaper, easier, and more rapid method of plant propagation.</p> <p>c) This method can lead to problems such as reduced genetic diversity, which makes species more vulnerable to environmental changes and diseases.</p>	<p>1</p> <p>1</p> <p>2</p>
<b>LONG ANSWER TYPE(5 MARKS)</b>		
<b>23</b>	<p>i) Stigma - Its surface is adapted to capture and hold pollen grains effectively.</p> <p>ii) Nectar is often found at the base of the flower, requiring pollinators to come into contact with the reproductive organs (stamens and pistils) as they collect it, thus aiding in the transfer of pollen.</p> <p>iii) Petals are often brightly colored and patterned to attract pollinators like bees, birds, and butterflies.</p> <p>iv) Many flowers produce scents to attract specific pollinators.</p> <p>v) Anthers exposed position allows easy access for pollinators, such as bees, or for the wind to carry pollen away.</p>	<b>5</b>
<b>24</b>	<p>a. Bread mold or Rhizopus</p> <p>b. Spore formation</p> <p>c. Spores are very tough material and do not get destroyed due to the presence of cyst. The cyst keeps genetic material inside the spore safe. When the right conditions are present, the spore allows the formation of a new organism using the genetic material.</p>	<b>5</b>
<b>25</b>	Vegetative propagation enhances the survival and spread of plant species by allowing rapid reproduction, adaptation to environmental stresses, efficient resource use, and colonization of new habitats. This method enables plants to thrive in diverse and often challenging conditions, contributing to ecosystem stability and biodiversity.	<b>5</b>

## CHAPTER MOTION AND TIME

S.N O	QUESTION	MARK S
	<b>SECTION -A (MCQ)</b>	
1	Which device is suitable in measuring the speed of runner in 100m race? a. Hour glass c. Stop watch b. Pendulum d. Sun dial	1
2	An example of oscillatory motion is a. Motion of earth around the sun c. Movement of a bicycle on a straight road b. Motion of a swing d. Motion of a fan	1
3	Change in position of a body is called a. Motion c. Rest b. Acceleration d. Speed	1
4	The device used to measure the total distance covered by a vehicle is a. Speedometer c. Anemometer b. Thermometer d. Odometer	1
5	Anitha was checking the speedometer of her car to measure a. The distance travelled in a single trip c. Speed of the vehicle b. Total distance covered d. Acceleration of the vehicle	1
6	The basic unit of time is a. Metre c. Second b. Hour d. Minute	1
7	Time period of a simple pendulum depends on a. Length of the pendulum c. Height b. Distance to be travelled d. Speed	1
8	The device with which time can be measured by the flow of sand is a. Sun dial c. Stop clock b. Hour glass d. Digital watch	1
9	Aman's scooter travels a distance of 60 m in 20 seconds. What is the speed of the scooter? a. 3m/s c. 10 m/s b. 6m/s d. 12 m/s	1
10	The basic unit of speed is: a. km/min c. m/min b. km/h d. m/s	1
	<b>ASSERTION AND REASON (1MARK)</b>	
11	Assertion: A faster moving object covers more distance in less time. Reason: The speed of a slow-moving object is less.	1

12	Assertion: A pendulum shows oscillatory motion. Reason: A pendulum shows to and fro motion by moving equal distances.	1
13	Assertion: The pendulum is at rest in its extreme positions. Reason: The metallic bob is free to swing on the rigid stand.	1
14	Assertion: The basic unit of speed is m/s. Reason: The speed of faster objects is less.	1
15	Assertion: Speedometer measures the speed of the object in km/hr. Reason: Odometer measures the total distance covered by a vehicle.	1
SECTION – B (2 MARKS)		
16	Study the graph and state the change of speed that occur here. 	2
17	Pendulum shows periodic motion. State its use. Give another example of periodic motion.	2
SECTION – C(3 MARKS)		
18	The following graph represents a running race. The participants are A,B,C and D. Find who is the winner of the race from the graph. Justify your answer. 	3
19	Raju takes 15 mins to cover 10 km and Ravi takes 20 mins to cover 10 km. Calculate their speed and find out who is faster?	3

C C T SOURCES BASED/CASE BASED

20

The following table gives you some data about four runners. Answer the questions based on the data.

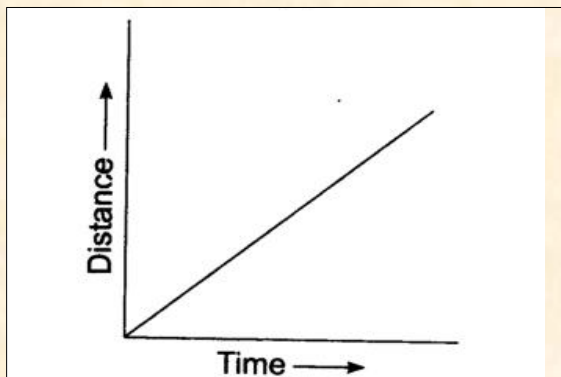
Name	Distance(m)	Time(s)
Anu	60	10
Manu	30	5
Sunu	40	4
Minu	100	25

- Who is the fastest?
- Who ran the farthest?
- Who all ran at the same speed?

4

21

Nivi's science teacher drew a graph on the board and asked him to give the answers for the following questions.



- What does a straight line in distance time graph indicates?  
 Plot a distance time graph to show that the object is at rest.  
 What would be the nature of the graph showing non-uniform motion?

4

22

Amit plans to visit his grandmother during a vacation. He used a motorcycle for the ride. Before starting the trip, Amit noted the reading of the odometer. After reaching his grandmother's home he again noted the reading.  
 Initially, odometer reading was 64830 km and secondly, it was 64940 km.  
 What is the distance between Amit's house and his grandmother's house?  
 Amit reached there by 2 hours. Calculate Amit's speed

4

**LONG ANSWER TYPE(5 MARKS)**

23

Anju travels daily by car to her office which is 10 km away from her house. The following table shows the time taken by Anju on two days to reach her office. Plot distance time graphs for the data given in the following tables and identify the nature of motion.

5

a.

Distance in Km	0	2	4	6	8	10
Time in min	0	4	8	12	16	20

b.

Distance in Km	0	2	4	6	8	10
Time in min	0	5	9	12	16	18

24

Observe the following image and answer the questions that follow .

5




Identify speed of the car and the total distance travelled by the car.

If the speed of the car reduces, what change you can notice in the meter given?

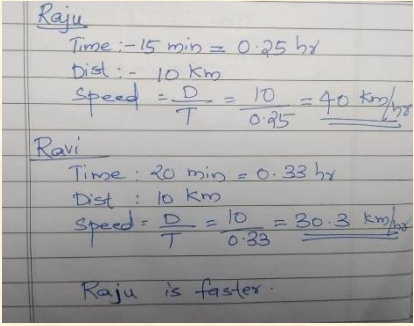
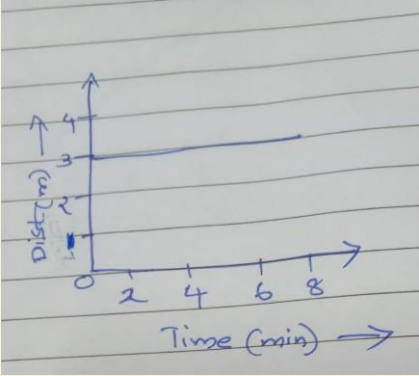
If the car travels 64 km more, what change you can notice in the meter given?



25		5
<p>identify the type of motion given the above image.  b. Write down two characteristics of this motion.  c. Give two other examples that show this type of motion.</p>		

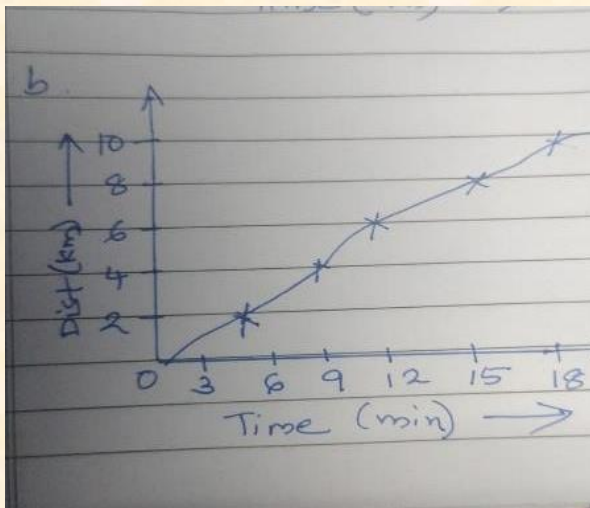
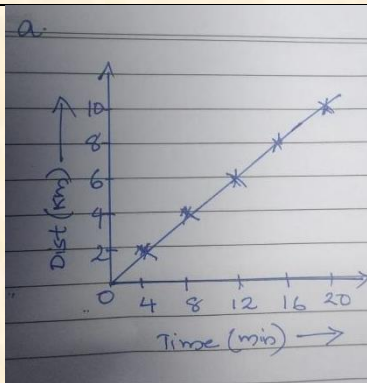
**ANSWERS**

S.N O	ANSWER KEY	MARK S
<b>SECTION -A (MCQ)</b>		
1	Stopwatch	1
2	b. Motion of a swing	1
3	Motion	1
4	Odometer	1
5	c .Speed of the vehicle	1
6	c Second	1
7	a. Length of the pendulum	1
8	b.Hour glass	1
9	a.3 m/s	1
10	d. m/s	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	(b) Both A and R are true but R is not the correct explanation of A.	1
12	(a) Both A and R are true and R is the correct explanation of A.	1
13	(d) A is false but R is true.	1
14	(c) A is true but R is false.	1
15	(b) Both A and R are true but R is not the correct explanation of A.	1

SECTION – B (2 MARKS)		
16	Speed decreases and finally comes to rest.	2
17	Used in Clocks & Seismometer. Motion of a swing.	1+1
SECTION – C(3 MARKS)		
18	A is the winner. A completes the race in less time.	1+2
19		3
C C T SOURCES BASED/CASE BASED		
20	Minu Minu Anu & Manu	1+1+2
21	Motion of the object is uniform.   <p>It can be a curve or zigzag line. It will nor be a straight line.</p>	1+2+1
22	110 km. $S=D/T$ ; $S=110/2$ ; $S=55$ Km/hr	2+2

LONG ANSWER TYPE(5 MARKS)

23



a : Uniform motion

b : Non-uniform motion

2+2+1

24

Speed : 80km/h and Total distance : 45236 km  
 The needle of speedometer comes down from 80 .  
 The reading in the Odometer shows 45300 km

2+2+1

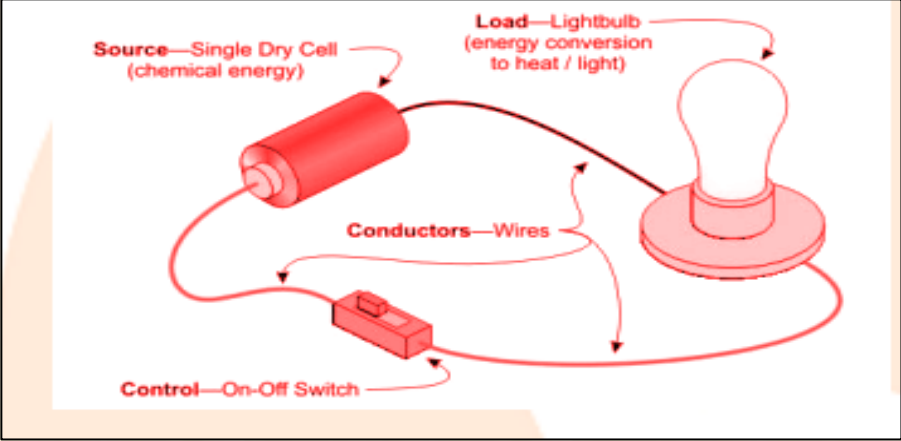
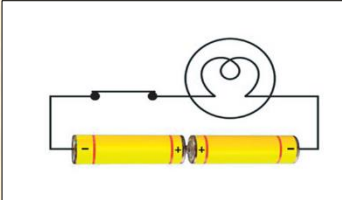
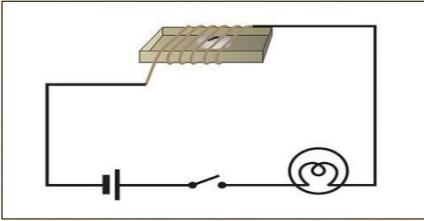
25

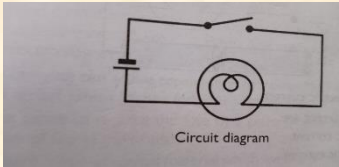
Oscillatory motion  
 Repeats at equal intervals of time  
 Shows to and fro motion  
 Pendulum, Flapping of wings

1+2+2

## CHAPTER- ELECTRIC CURRENT AND IT'S EFFECTS

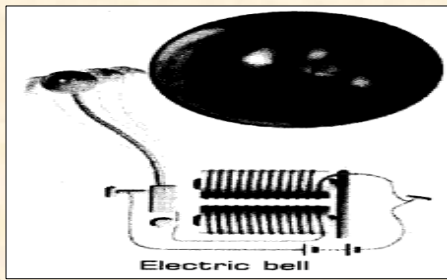
	QUESTION TYPE	Point value
	MCQ	
<b>1</b>	A glowing filament will be At Atmospheric temperature C. At low temperature At high temperature D. At temperature of ice	1M
<b>2</b>	When electric current is passed through an electric bulb, it produces Heat and sound C. Heat and light Heat and magnetism D. Light only	1M
<b>3</b>	Which piece is attracted by an electro magnet Wood B. Plastic C. Rubber D. Iron	1M
<b>4</b>	A battery is a group of A single cell C. Only two cells Two or more cells D. Only three cells	1M
<b>5</b>	When a switch is in OFF position i. Circuit starting from the positive terminal of the cell stops at the switch ii.No current flows through it iii. Current flows after some time iv. Circuit is open Choose the combination of correct answers from the following. I and ii B. ii and iii C. iii and iv D. ii and iv	1M
<b>6</b>	The metal which is poor conductor of electricity is Copper B. Iron C. Gold D. Aluminium	1M
<b>7</b>	The coil of wire contained in a heater is an element B. a Circuit C. a component D. a spring	1M
<b>8</b>	The device used for measuring current is A. potentiometer C. compass B. ammeter D. voltmeter	1M
<b>9</b>	Which of the following turns off automatically when current in the circuit exceeds the limit? Electromagnet B. coil C. MCB D. CFL	1M
<b>10</b>	The working of an electric fuse is based on which of the following effect ? Magnetic effect C. Chemical effect Heating effect D. Physical effect	1M
	<b>SHORT ANSWER TYPE I QUESTIONS</b>	<b>2M</b>
<b>11</b>	Draw the Circuit diagram for following picture.	2M

		
<p><b>12</b></p>	<p>The bulb in the circuit shown in the figure does not glow. Can you identify the problem? Make necessary changes in the circuit to make the bulb glow.</p> 	<p><b>2M</b></p>
<b>SHORT ANSWER TYPE II QUESTIONS</b>		
<p><b>13</b></p>	<p>Distinguish between an open circuit and a closed circuit?</p>	<p><b>3M</b></p>
<p><b>14</b></p>	<p>A. Why do we cover plug pinholes which are within the reach of children with cello tape or a plastic cover when not in use? B. If cells are placed side by side. Then, how are the terminals of the cells connected?</p>	<p><b>3M</b></p>
<p><b>15</b></p>	<p>Will the compass needle show deflection when the switch in the circuit shown by the figure is closed?</p> 	<p><b>2M</b></p>
<p><b>16</b></p>	<p><b>Read the following passage and answer the questions.</b> Aryan’s family is watching a film on a holiday evening. While watching, the electricity of his house went off due to which he could not able to see anything around him. Then anyhow, he managed to get his mobile in his hand and with the help of its light, he went outside of his room to check if there was any problem in the electric circuit board of his house. At the same time, his father suggested him to maintain the distance from the circuit board and decided to call some electrician to check the problem. (a) State the values here showed by Aryan’s father. (b) Why is an electric fuse required in all electrical appliances?</p>	<p><b>3M</b></p>

LONG ANSWER QUESTIONS			
17	Explain with the help of a diagram, how does the magnetic effect of electric current help in the working of an electric bell.	5M	
18	i. If we connect more cells in the circuit, then what will happen? ii. If the current flows through wire, does the wire behave like a magnet?	5M	
19	Ravi went to Arjun's house. He saw that every room in Arjun's house is lit up with electric bulbs. Ravi suggested him to use CFLs and LED tube lights. He also suggested him to check for the ISI mark on the bulbs and tubes before buying them. Based on the above information, answer the following questions. Why CFLs are better sources of light than electric bulbs? What is the importance of ISI mark on the electric bulbs and tubes?	5M	
<b>KEY</b>			
A                    2. C                    3. D                    4. B                    5. D 6. B                    7. A                    8. B.                    9. C 10. B		10*1	
<b>SHORT ANSWER TYPE I</b>			
11	<b>CIRCUIT</b> 	2M	
12	The bulb in the picture doesn't glow because the batteries are connected in a wrong way we connect + ve and -ve terminals together (side by side) then the bulb will glow.	2M	
13	<b>Open Circuit</b>	<b>Closed Circuit</b>	3M
	1. Switch is in 'off' position 2. There is no flow of current. 3. Electric appliances do not function.	Switch is in ON position. There is flow of current. Electric appliances work.	
14	A. We do cover plug pinholes which are within the reach of children with cello tape or plastic cover to avoid electric shocks. If unconsciously, a child puts his finger in the electric socket, the shock may be fatal. B. If cells are placed side by side, then with the help of some connecting wires, the positive terminal of one cell is connected to the negative terminal of other to produce a combination of power of all cells which can be called a battery.	3M	
15	Yes the compass shows deflection when the circuit is closed	2M	
16	(a) Aryan's father seems very sensible in taking the decisions and he showed a very great concern towards his son. (b) When an electric fuse is kept in all appliances, if any short circuit happens It will prevent the supply of current and makes the device safe.	3M	

**LONG ANSWER TYPE QUESTIONS**

**17**



**5M**

The circuit of the given figure consists of a coil of Wire wound on an iron piece. The acts as an electromagnet. An iron strip with a hammer at one end is kept close to the electromagnet.

There is a contact screw near the iron strip. When the iron strip is in contact with screw, the current flows through the coil which becomes an electromagnet. It then pull iron strip. In the process . the hammer at the end of the strip strikes the gong to produce sound.

However , when the electromagnet pulls the iron strip, it also breaks the circuit. The coil no longer an electromagnet. It no longer attracts the iron strip. The iron strip comes back to original position and touches the contact screw again . This completes the circuit.

**18**

i. If we connect more of cells in the circuit, then the nail will attract more pins. It is due to the reason that the current flowing through the wire wound on the nail will get increased which in turn will increase the strength of the electromagnet

ii. When the current flows through any wire, a magnetic field is developed around that wire or coil and it behaves like magnet. It can be analysed by placing a magnetic compass around the wire, it will show deflection of the needle.

**5M**

**19**

A. CFLs are better source of light than electric bulbs because electric bulbs heat up when electricity is passed through them. This causes wastage of electricity. CFLs are energy saving bulbs that saves a lot of electricity.

B. ISI mark tells us about the quality of product we buy. It ensures that the appliance is safe and wastage of electricity is minimum.

**5M**

## CHAPTER - LIGHT

S.N O	QUESTION	POINT VALU E
SECTION -A (MCQ)		
1	The coloured band of light obtained by dispersion of light is called: (a) image (b) spectrum (c) convergence (d) scattering	1
2	The image formed by a convex mirror is: (a) erect and diminished (b) erect and enlarged (c) inverted and diminished (d) inverted and enlarged	1
3	Light is a form of: (a) Energy (b) Power (c) Heat (d) Temperature	1
4	The image which can be caught on a screen is called: (a) Real image (b) Virtual image (c) Shadow (d) Impression	1
5	You are provided with a concave mirror, a convex mirror, a concave lens and a convex lens. To obtain an enlarged image of an object you can use either: (a) concave mirror or convex mirror (b) concave mirror or convex lens (c) concave mirror or concave lens (d) concave lens or convex lens	1
6	If an object is placed at a distance of 0.5 m in front of a plane mirror, the distance between the object and the image formed by the mirror will be: (a) 2 m (b) 1 m (c) 0.5 m (d) 0.25 m	1
7	Splitting of white light into seven colours is called: (a) reflection of light (b) Rectilinear propagation of light (c) Lateral inversion (d) Dispersion	1



8	Rectilinear propagation is (a) mode of travelling in curved lines (b) mode of travelling in straight lines (c) ability to bend around obstacles (d) displaying the phenomenon of diffraction	1
9	Which of the following is used as a side view mirror? (a) Plane mirror (b) Concave mirror (c) Convex mirror (d) Convex lens	1
10	A virtual image larger than the object can be produced by a (a) Plane Mirror (b) Concave mirror (c) Convex mirror (d) All of the above	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true. Assertion (A): Rainbow is an example of the dispersion of sunlight by the water droplets. Reason (R): Light of shorter wavelength is scattered much more than light of larger wavelength.	1
12	Assertion (A): Virtual image can't be seen by human eye. Reason (R): Virtual image is formed by diverging rays.	1
13	Assertion (A): The air bubble shines in water. Reason (R): Air bubble in water shines due to refraction of light.	1
14	Assertion (A): When we see an object, the image formed on the retina is real and inverted. Reason (R): If the magnification of a system is less than one, then the image formed is inverted.	1
15	Assertion : Light converges on a virtual object. Reason : Virtual object is always behind a mirror.	1
<b>SECTION – B (2 MARKS)</b>		
16	Tina has prepared a small top with a small circular disc with seven rainbow colours painted on it. When the top rotates it appears nearly white. Why?	2
17	State the characteristics of the image formed by a plane mirror.	2
<b>SECTION – C(3 MARKS)</b>		
18	David is observing his image in a plane mirror. The distance between the mirror and his image is 4 m. If he moves 1 m towards the mirror, then find out the distance between David and his image.	3
19	The rear view mirror of a car is a plane mirror. A driver is reversing his car at a	3

	speed of 2 m/s. The driver sees in his rear view mirror the image of a truck parked behind his car. The speed at which the image of the truck appears to approach the driver will be _____.	
	<b>C C T SOURCES BASED/CASE BASED</b>	
20	A shopkeeper wanted to fix a mirror which will give a maximum view of his shop to avoid theft . a) What type of mirror should he use? Give reason. b) Give another uses of the mirror which will be used by shopkeeper.	4
21	A boy observed that an image formed on the screen when he was playing with candle . a) what type of image is formed on screen. b) what are those images which cannot form on screen. c) differentiate between the two type of images mentioned above.	4
22	Namit was driving a car and suddenly became aware of a loud sound coming from behind. He looked through his rear view mirror and saw an ambulance. He recalled reading that such emergency vehicles often have their name written in the mirror (AMBULANCE) or writing, i. e. <b>AMBULANCE</b> . He quickly made way for the ambulance, murmuring a quick prayer for the speedy recovery of the patient inside the ambulance. (a) Name the type of mirror which is used as a rear view mirror and why? (b) Mention values did Namit exhibit.	4
	<b>LONG ANSWER TYPE(5 MARKS)</b>	
23	A) Why concave mirror is called a converging mirror and a convex mirror is called a diverging mirror? 3 MARK B) What are the uses of concave mirror? 2 MARK	5
24	A) How is the rainbow formed? 2 MARK B) Apart from rainbow, where else we can see seven colours of sunlight? 3 MARK	5
25	Define the following: (a) Real image (b) Virtual image	5

### ANSWERS LIGHT

S.N O	ANSWER KEY	POINT VALU E
	<b>SECTION -A (MCQ)</b>	
1	B	1
2	A	1
3	A	1
4	A	1
5	B	1
6	B	1
7	D	1
8	B	1
9	C	1
10	B	1

ASSERTION AND REASON (1MARK)		
11	B	1
12	D	1
13	A	1
14	C	1
15	B	1
SECTION – B (2 MARKS)		
16	When the top is rotated fast, the colours get mixed together and the top appears to be whitish.	2
17	The image formed by a plane mirror is erect. It is virtual and is of the same size as the object. The image is at the same distance behind the mirror as the object is in front of it.	2
SECTION – C(3 MARKS)		
18	Distance between the mirror and David's image is 4m. If the David moves 1 m towards the mirror, then the distance between mirror and David's image will be $(4 - 1) \text{ m} = 3\text{m}$ We know that in case of plane mirror image is at the same distance behind the mirror as the object is in front of it. Therefore, Distance between David and mirror = Distance between mirror and David's image So, Distance between David and his image = Distance between David and mirror + Distance between mirror and David's image (i.e., $3 + 3 = 6 \text{ m}$ ).	3
19	The image of the truck will travel a distance twice the distance travelled by the car in equal time. Therefore, image of the truck will appear to approach the driver with the speed of $(2 + 2) \text{ m/s}$ i.e., $4 \text{ m/s}$ .	3
C C T SOURCES BASED/CASE BASED		
20	a) a shopkeeper wanted to fix a mirror which will give him maximum view of his shop, he should use convex mirror. In case of convex mirror, it will give a wider field of view, i.e. it can collect light from a large area spread over them. b) When convex mirrors are used, the magnification of objects becomes simple. It is used in sunglasses. It is used as a rear-view mirror in automobiles. It's utilised in ATMs and other places for security reasons. It's used as a reflector for street lights.	4
21	a) real images. b) virtual image. c) A real image is formed by the actual intersection of light rays whereas a virtual image is formed by the imaginary intersection of light rays. A real image can be formed in in a screen but a virtual image can be only seen in the mirror.	4
22	a)Convex mirror is a mirror which is used as a rearview mirror. It is used to get a wide view of traffic behind. (b) The values exhibit by Namit here is courtesy concerned for other, sympathy, knowledgeable.	4
LONG ANSWER TYPE(5 MARKS)		
23	A) Concave mirror is called a converging mirror because parallel rays of light fall on the mirror they converge at a point called focus. Convex mirror is called a diverging mirror because parallel rays of light fall on it they diverge after reflection.	3+2

	<p>B) ·Used by the ENT Specialists, dentists.  Used as Shaving mirror.  Used by makeup artists.  Used in torches &amp; Car headlights to get a parallel beam of light.</p>	
24	<p>A) A rainbow is formed by the refraction and reflection of the sun's rays through raindrops. When it is raining in one part of the sky and sunny in another, a rainbow appears. The centre of the rainbows arc is always directed away from the sun.  B) You can see seven colours of sunlight when it falls over soap bubbles, oil films, shiny surfaces of CD etc.</p>	5
25	<p>(a) Real image: Real image are those images that can be captured on a screen are known as real images. For example, in a camera, images are real and can be captured on the negative, which acts as a screen.  (b) Virtual image: The image formed by a plane mirror cannot be captured on a screen, and is called a virtual image</p>	5

## CHAPTER      FORESTS: OUR LIFELINE

S.N O	QUESTION	MARK S
	SECTION -A (MCQ)	
1	<p>Raju and his brother were playing football suddenly they saw heavy wind with sand. Raju asked his brother by which of the following methods can we reduce the impact of wind erosion?</p> <p>a) Removing vegetation cover b) Planting windbreaks or shelterbelts c) Increasing the size of plowed fields d) Expanding construction projects</p>	1
2	<p>Teacher told the students that decomposers are important in the ecosystem. Ram asked the teacher what might happen if decomposers are completely removed from the ecosystem?</p> <p>a) Increased soil fertility due to the accumulation of organic matter b) Accumulation of dead organic material and nutrients, leading to a buildup of waste c) Enhanced growth of primary producers due to reduced competition d) Decreased biodiversity due to the elimination of invasive species</p>	1
3	<p>Paheli and her grand father was planting few saplings in their garden. When Paheli asked about adding fertilizer to the soil her grandfather told that their is no need of fertilizer already this soil has humus in it. How did the grandfather identify the presence of humus in the soil?</p> <p>a) Light-colored soil b) Hard, compact soil c) Dark, rich soil d) Sandy texture</p>	1

4	<p>Archana when conversing with her grandmother, her grandmother told that this village had many trees before but now people had cut all the trees and encroached this land. She briefed Archana about the consequence of cutting trees. Deforestation can lead to which of the following environmental issues?</p> <p>a) Increased biodiversity  b) Soil erosion  c) Reduced carbon dioxide levels  d) Improved air quality</p>	1
5	<p>Which of the following best describes the role of microorganisms in the formation of humus?</p> <p>a) They consume humus, reducing its quantity  b) They help decompose organic matter into humus  c) They replace humus with inorganic material  d) They inhibit the formation of humus</p>	1
6	<p>An Ecologist visited the school and gave a lecture on carbon cycle he told that the carbon cycle is essential for regulating Earth's climate and supporting life by recycling carbon through various Earth systems. Arthi was curious about decomposers and asked the ecologist about the role of decomposers in the carbon cycle. Which of the following will be the answer given by ecologist to Arthi?</p> <p>a) Releasing oxygen into the atmosphere  b) Fixing nitrogen in the soil  c) Breaking down carbon-containing compounds  d) Absorbing carbon dioxide</p>	1

7	<p>The table shows the area under forest of different regions.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Region</th> <th style="text-align: center;">Forest cover area in sq. Km</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">A</td> <td style="text-align: center;">983.24</td> </tr> <tr> <td style="text-align: center;">B</td> <td style="text-align: center;">2172.09</td> </tr> <tr> <td style="text-align: center;">C</td> <td style="text-align: center;">888.12</td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">4894.35</td> </tr> </tbody> </table> <p>Which region will be more prone to flood?</p> <p>a) region A      b) region B      c) region C      d) region D</p>	Region	Forest cover area in sq. Km	A	983.24	B	2172.09	C	888.12	D	4894.35	1
Region	Forest cover area in sq. Km											
A	983.24											
B	2172.09											
C	888.12											
D	4894.35											

8	<p>Sanjana read in newspaper that the Asháninka people, who live in the Amazon rainforest, have faced habitat loss due to illegal logging, coca cultivation, and infrastructure projects like dams and roads. How does the loss of forest habitat specifically impact the daily lives and traditions of tribal communities?</p> <p>a) Increases access to modern technology and amenities</p> <p>b) Reduces availability of traditional resources and disrupts cultural practices</p> <p>c) Enhances opportunities for urban employment</p> <p>d) Improves access to new forms of education and healthcare</p>	1
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9 An image of food web is shown below

1



Food web,  
consisting of many food chains

If plants are removed from this food web which organism will be affected?

- a) only rabbit and goat
- b) only Tiger , rat and peacock
- c) only sheep, rat and rabbit
- d) All the animals involved in the food web

10 Sita saw that there is a decrease in water level in her locality she asked her father for the reason. Her father told that there is a decrease in rainfall this year. Next day Sita asked her teacher the reason for low rainfall in her locality. Her teacher told that deforestation affects the water cycle by:

1

- a) Increasing the rate of groundwater recharge
- b) Reducing the amount of water vapor released into the atmosphere
- c) Increasing transpiration rates
- d) Enhancing the formation of clouds



### ASSERTION AND REASON (1MARK)

Each question consists of two statements,namely,Assertion (A) and Reason (R).For selecting the correct answer,use the following code:

- (a) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

11	Assertion: Forests play a crucial role in regulating the global climate. Reason: Forests act as carbon sinks by absorbing carbon dioxide from the atmosphere, which helps mitigate the effects of climate change.	1
12	Assertion: Urbanization has no impact on forest ecosystems. Reason: Urbanization can lead to habitat destruction, pollution, and fragmentation of forest ecosystems, which negatively impacts forest health and biodiversity.	1
13	Assertion (A): Herbivores are the primary consumers in a food chain. Reason (R): Herbivores depend upon animals for their food.	1
14	Assertion (A): Carnivores are the primary producers in a food chain. Reason (R): Carnivores only eat herbivores and do not consume producers.	1
15	Assertion: Decomposers are crucial for nutrient cycling in ecosystems. Reason: Decomposers break down dead organic matter into simpler substances, returning essential nutrients to the soil, which supports plant growth and maintains ecosystem health.	1
SECTION – B (2 MARKS)		
16	Paheli when she went for trekking in forest she observed that the weather was so pleasant and she could hear birds chirping rather than noise of vehicles which used to be the case in cities. Why did she not hear any noise in forest?	2

17

Tibu sketched horizontal view of a forest near his house.

2 (1+1)



- a. Which layer forms the canopy of the forest?
- b. Which category of plants are found in layer B?

SECTION – C(3 MARKS)

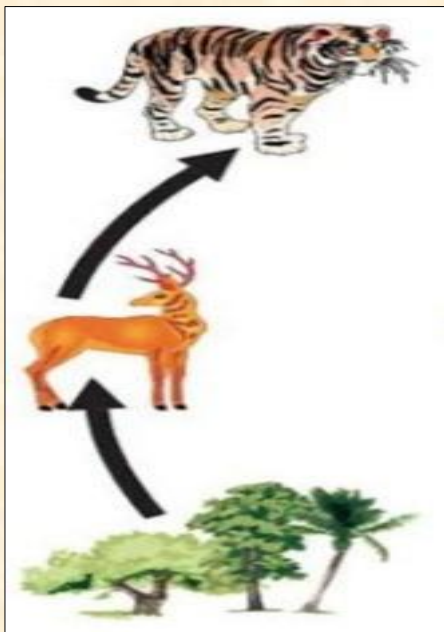
18

In news Bhoojho heard that Chennai people's life is disturbed by flood. Bhoojho was wondering even though it rains heavily in his village which is situated near forest it doesn't stagnate. What might be the reason for water stagnation in cities?

3

19

The image shows the picture of a food chain.



- a. Which organism will be affected when deer population becomes zero?
- b. What happens to plant population when deers are perished from the earth? Justify your answer.

1  
2

C C T SOURCES BASED/CASE BASED

20

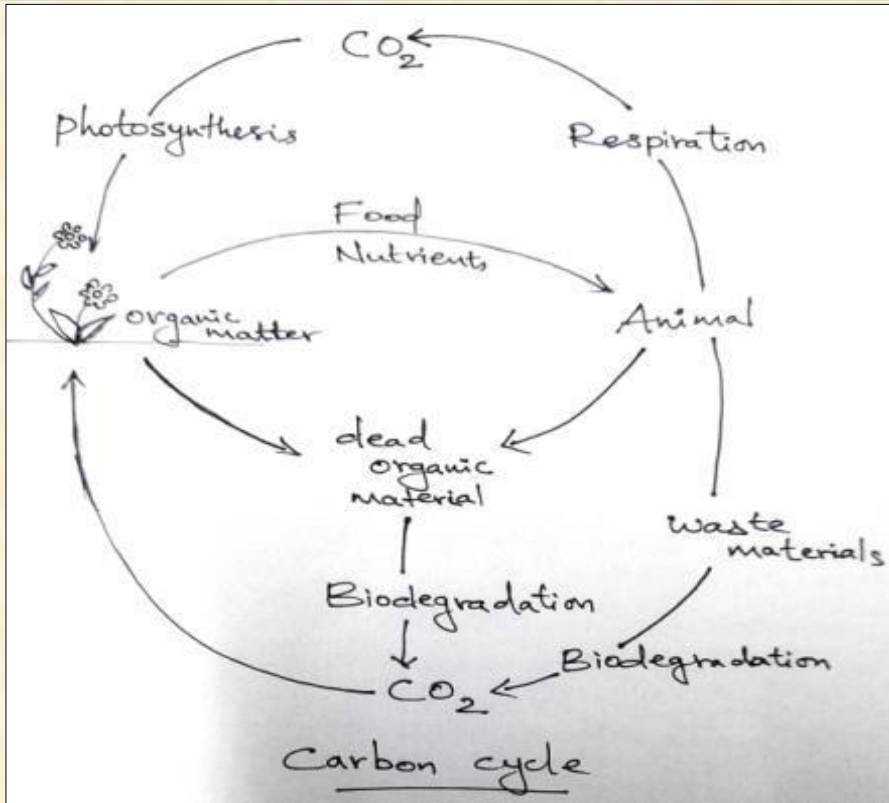
Read the paragraph given below and answer the following questions

4

The Silent Valley Movement was a significant environmental protest in India during the 1970s and 1980s. The movement aimed to prevent the construction of a hydroelectric dam on the Kunthipuzha River in the Silent Valley, a pristine rainforest in the Western Ghats of Kerala.

Answer the following

- i) How does the decrease in forest areas impact local communities, particularly indigenous populations?
- ii) Why social activists protested against construction on dam in the silent valley?
- iii) What are the consequences of deforestation on global climate change and biodiversity loss?



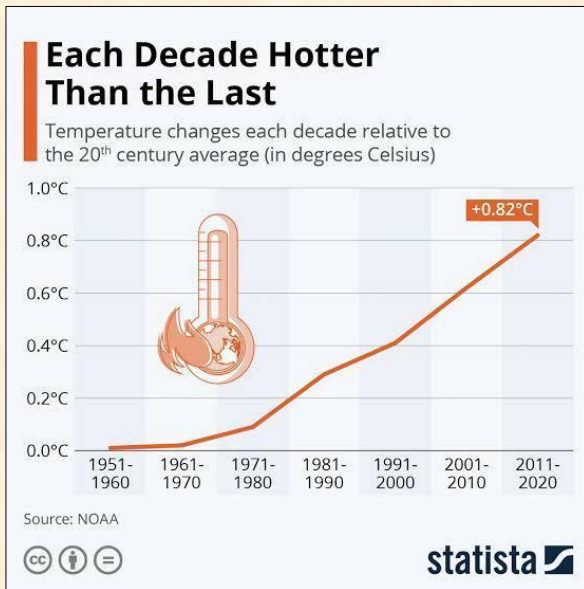
Answer the following questions

- i) Which microorganisms convert the dead plants and animals to humus?
- ii) How forest act like carbon sinks?
- iii) How do human activities, such as deforestation and fossil fuel burning, disrupt the natural carbon cycle?

22

Observe the graph given below and answer the following questions

4



- I) which decade was recorded the highest temperature?
- ii) How much temperature has got increased from 1951 to 2020?
- iii) Whether deforestation play a vital role in global warming? Justify your answer.

LONG ANSWER TYPE(5 MARKS)

23

- i) Why forests are considered as green lungs? 2
- ii) Forests are often considered vital to the health of our planet and the well-being of human societies. Discuss the various ecological and economic reasons for conserving forests. 3

24

- I) Analyze the impact of removing a top predator from a food chain. What are the potential consequences for the other organisms and the overall ecosystem? 2
- ii) What happens if a single species is removed from a food chain? How would the removal of the same species affect a food web? 3

25

- i) Name two decomposers. 1
- ii) Why earthworms are called farmers friend? 1
- iii) Project Tiger was launched to protect and conserve tiger populations and their habitats in India. What we're the measures taken under project Tiger to conserve Tiger population? 3

## ANSWERS

S.N O	ANSWER KEY	MARKS
<b>SECTION -A (MCQ)</b>		
1	C	1
2	B	1
3	C	1
4	B	1
5	B	1
6	C	1
7	C	1
8	B	1
9	D	1
10	B	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	A	1
12	D	1
13	C	1
14	D	1
15	A	1
<b>SECTION – B (2 MARKS)</b>		
16	Forests play a significant role in noise reduction by absorbing and diffusing sound waves.	2
17	I) layer A ii) herbs	2
<b>SECTION – C(3 MARKS)</b>		
18	Improper drainage system ,Less no. Of trees ,Urbanization  Extensive use of impervious surfaces like roads, pavements, and buildings prevents water from being absorbed into the ground.	3

19	I) Tiger ii) Plants population will increase drastically because there are no herbivores to consume them	3
C C T SOURCES BASED/CASE BASED		
20	i) Affects their economic stability, cultural practices, health, and environment ii) Affects flora and fauna of that region, increases soil erosion , loss of habitat iii) species extinction, increase in CO <sub>2</sub> level, global warming, less rain fall	4
21	I) Decomposers ii) They absorb CO <sub>2</sub> through photosynthesis, store carbon in their biomass iii) Increase in green house gases, reduced absorption of CO <sub>2</sub> , increased absorption of CO <sub>2</sub> in ocean.	4
22	I) 2011-2020      ii) 0.84°C  iii) yes, Deforestation increases global warming by releasing stored carbon into the atmosphere, reducing the Earth's capacity to absorb CO <sub>2</sub> , disrupting local and global climate patterns	4
LONG ANSWER TYPE(5 MARKS)		
23	i) Forest produce oxygen, absorbs carbon dioxide, filters air pollutants, and helps to regulate the Earth's climate.  ii) Biodiversity preservation, water cycle management, climate regulation, recreational activities, economic livelihood	5
24	I) Population explosion of prey species which inturn result in over consumption of lower level organisms  ii) If a species is removed in a food chain next species in the food chain will perish due to lack of food while in a foodweb alternative food is available for the survival of a species.	5
25	I) fungi, bacteria, earthworm  ii) It cycles nutrients , in aerates the soil, Increase soil fertility, improve soil structure  iii) created protected areas, enforced anti-poaching laws, engaged communities, supported scientific research	5

## CHAPTER WASTE WATER STORY

S.NO	QUESTION	POINT VALUE
SECTION -A (MCQ)		
1	<p>Which of the following is wastewater?</p> <p>[A]. Water trickling from a damaged tap</p> <p>[B]. Water coming out of a shower</p> <p>[C]. Water flowing in a river</p> <p>[D]. Water coming out of a laundry.</p>	1
2	<p>Sewage is mainly a:</p> <p>[A]. Liquid waste</p> <p>[B]. Solid waste</p> <p>[C]. Gaseous waste</p> <p>[D]. Mixture of solid and gas.</p>	1
3	<p>Which of the following is or are products of wastewater treatment?</p> <p>[A]. Biogas</p> <p>[B]. Sludge</p> <p>[C]. Both biogas and sludge</p> <p>[D]. Aerator</p>	1
4	<p>Rupali is writing some statements, choose the incorrect statement and help her:</p> <p>[A]. The sewage released by houses and other buildings contain a large number of harmful substances and a disease-causing microorganism.</p> <p>[B]. Drinking of water contaminated with sewage, spread disease in people which can even lead to death.</p> <p>[C]. The discharge of untreated sewage into rivers can also kill fish and other aquatic animals.</p> <p>[D]. None of the above.</p>	1
5	<p>Read the following sentences carefully, and choose the incorrect one:</p> <p>[A]. Use water is waste water which can be recycled.</p> <p>[B]. Wastewater is treated in a sewage treatment plant.</p> <p>[C]. By products of wastewater treatment are sludge and biogas.</p> <p>[D]. Sewage is a liquid waste which causes water pollution.</p>	1
6	<p>Water polluted by various human activities cause a number of water-borne diseases. Which of the following is not a water-borne disease?</p> <p>[A]. Cholera</p> <p>[B]. Typhoid</p> <p>[C]. Asthma</p> <p>[D]. Dysentery</p>	1
7	<p>Pick from the following one chemical which is used to disinfect water?</p> <p>[A]. Chlorine</p> <p>[B]. Washing soda</p>	1



	[C]. Silica [D]. Coal	
8	The full form of WWTP is: [A]. World Wide Transport Programme [B]. Waste Water Treatment Plant [C]. World Workers' Talent Programme [D]. None of these.	1
9	Which of the following is a part of inorganic impurities of the sewage? [A]. Pesticides [B]. Urea [C]. Phosphate [D]. Vegetable waste	1
10	Which is used in vermi processing toilets? [A]. Cockroaches [B]. Earthworms [C]. Snail [D]. Silkworms	1
<b>ASSERTION AND REASON (1MARK)</b>		
11	The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true. Assertion (A) : We should not excrete in the open. Reason (R) : Poor sanitation and contaminated water cause a number of diseases.	1
12	Assertion (A) : The underground network of big and small pipes that carries sewage from point of being produced to the point of disposal is known as sewerage. Reason (R) : In sewerage manholes are located at every 30 m to 40 m.	1
13	Assertion (A) : Cleaning of water is a process of removing pollutants before it enters a water body. Reason (R) : The process of cleaning of water and removal of pollutants from it is called "sewage treatment".	1
14	Assertion: Wastewater could be reused. Reason: Wastewater is transparent, colourless and odourless.	1
15	Assertion: During secondary treatment of sewage, the primary effluent is passed into large settling tanks and is constantly agitated mechanically and air is pumped into it. Reason: This allows the vigorous growth of the useful anaerobic microbes.	1
<b>SECTION – B (2 MARKS)</b>		
16	_____, _____ and _____ are the inorganic impurities present in the sewage.	2

17	What is the role of bar screens in wastewater treatment?	2
<b>SECTION – C(3 MARKS)</b>		
18	Explain the following terms: a) Sewage b) Cleaning of Water. c) sludge.	3
19	A mixture (x) in water contains suspended solids, organic impurities, inorganic impurities (a), nutrients (b), disease-causing bacteria and other microbes. Give names for (x), (a) and (b)?	3
<b>C C T SOURCES BASED/CASE BASED</b>		
20	A residential area lacks proper wastewater treatment, leading to groundwater contamination. a) discuss the health risks associated with contaminated water. b) give the name of diseases caused by contaminated water. c) suggest two some methods for the treatment of wastewater.	4
21	Ravi sees a man falling into manhole. He shouted for help and he gets the man out of it safely. a) what are manholes. b) at what distance a manhole should be. c) how can we avoid these type of accidents .	4
22	Sumit visited his village during holidays and noted that his uncle had installed Rain water harvesting system. His uncle informed him that the rain water is stored between layers of hard rock and below the water table from where water can be pumped out. a) What is the water storage area known as? b) what is the importance of rain water. c) suggest any other two method for rain water harvesting.	4
<b>LONG ANSWER TYPE(5 MARKS)</b>		
23	Write one word for the following. a) The settling solids that are removed by the scrapper during the treatment of wastewater. b) A drain system which is a breeding place for flies and mosquitoes. c) A liquid waste that causes water and soil pollution. d) A liquid treated in a sewage treatment plant. e) A microbe which causes dysentery.	5
24	Suggest some of the better housekeeping practices that can be adopted to minimise the drain blockage.	5
25	List various steps involved in wastewater treatment.	5

### ANSWERS -WASTE WATER STORY

S.NO	ANSWER KEY	POINT
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		VALUE
	<b>SECTION -A (MCQ)</b>	
1	d	1
2	a	1
3	c	1
4	d	1
5	D Sewage is a liquid waste which causes water pollution as well as soil pollution.	1
6	c	1
7	a	1
8	b	1
9	c	1
10	b	1
	<b>ASSERTION AND REASON (1MARK)</b>	
11	a	1
12	C (manholes are located every 50-60m.	1
13	b	1
14	c	1
15	d	1
	<b>SECTION – B (2 MARKS)</b>	
16	Nitrates, phosphates, metals.	2
17	Bar screens are used to filter out wastewater. It helps in the removal of large materials like rags, sticks, cans, plastic packs, and napkins.	2
	<b>SECTION – C(3 MARKS)</b>	
18	a) Sewage: Sewage is wastewater that is discharged by residences, businesses, medical facilities, and other users. It also contains rainwater that has rained heavily or run down the street during a storm. Waste that is liquid is sewage. b) Cleaning of Water: Cleaning of water is a process of removing pollutants before it enters a water body or is reused. c)Sludge is a semi-solid waste product that's created during wastewater treatment.	3
19	(x) sewage (a) nitrates, phosphates and metal (b) phosphorus and nitrogen	3
	<b>C C T SOURCES BASED/CASE BASED</b>	
20	a) Contaminants in our water can lead to health issues, including gastrointestinal illness, reproductive problems, and neurological disorders. Infants, young children, pregnant women, the elderly, and people with weakened immune systems may be at increased risk for becoming sick after drinking contaminated water. b) diarrhoea, cholera, dysentery, typhoid and polio. c)There are two basic stages in the treat- ment of wastes, primary and secondary, which are outlined here. In the primary stage, solids are allowed to settle and removed from wastewater. The secondary stage uses biological	4

	processes to further purify wastewater. Sometimes, these stages are combined into one operation.	
21	a) A manhole is a covered vertical hole in the ground, pavement or road above the underground sewer pipeline. b) every 50-60 m. c) The accidents can be avoided by regularly inspecting, repairing, and maintaining these openings.	4
22	a) Aquifer b) rainwater, which is pure and of good quality, can be used for irrigation, washing, cleaning, bathing, cooking and also for other livestock requirements. c) roof top harvesting. Digging a big pit.	4
LONG ANSWER TYPE(5 MARKS)		
23	a) Sludge b) Open c) Sewage d) Wastewater e) Protozoa .	5
24	Fats and cooking oil shouldn't be flushed down the drain. The pipes may become clogged as they solidify. Throwing oil and fats in the trash will prevent them from clogging open drains and diminishing the soil's capacity to filter water. Paints, solvents, pesticides, motor oil, and pharmaceuticals all include chemicals that can kill the bacteria that assist filter water. So don't flush them down the drain. Always dispose off used tea leaves, solid food scraps, soft toys, cotton, sanitary towels, and other waste in the trash can because these materials clog the drains. They prevent oxygen from flowing freely. The degrading process is hampered as a result.	5
25	Filtration: The wastewater is passed through bar screen. ... Grit and sand removal: The wastewater is slowly passed through the grit and sand removal tank. ... Sedimentation: The wastewater is then sent to the sedimentation tanks. ... Aeration: Air is pumped into the clarified water so that bacteria can proliferate.	5