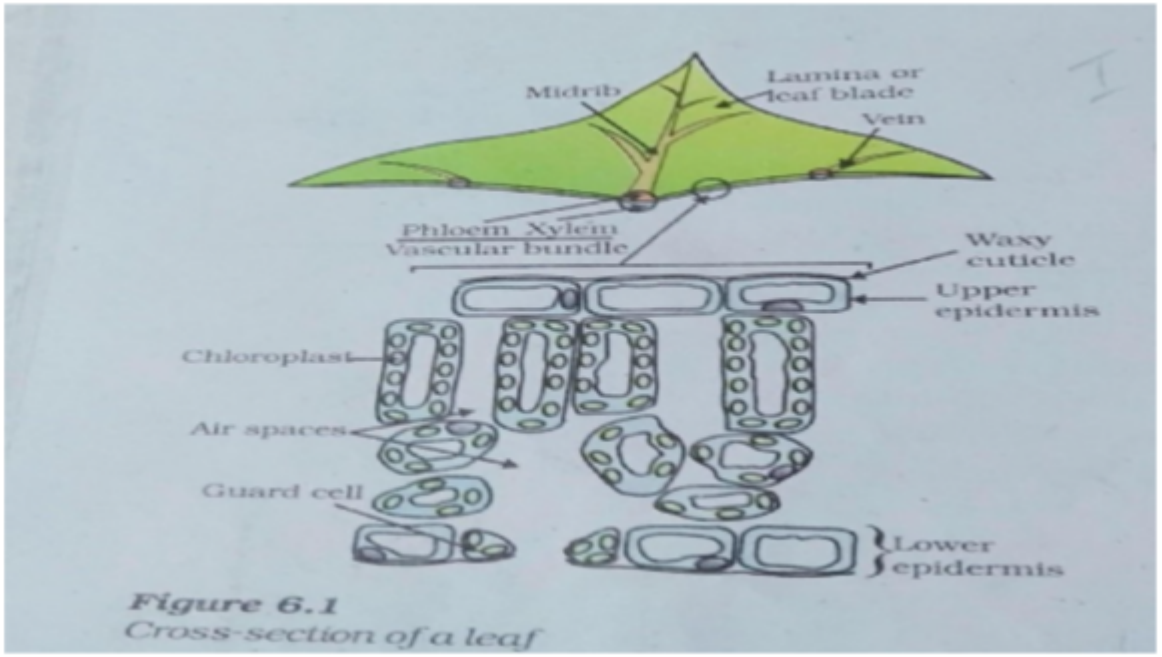
Competency based question bank (2023-2024)

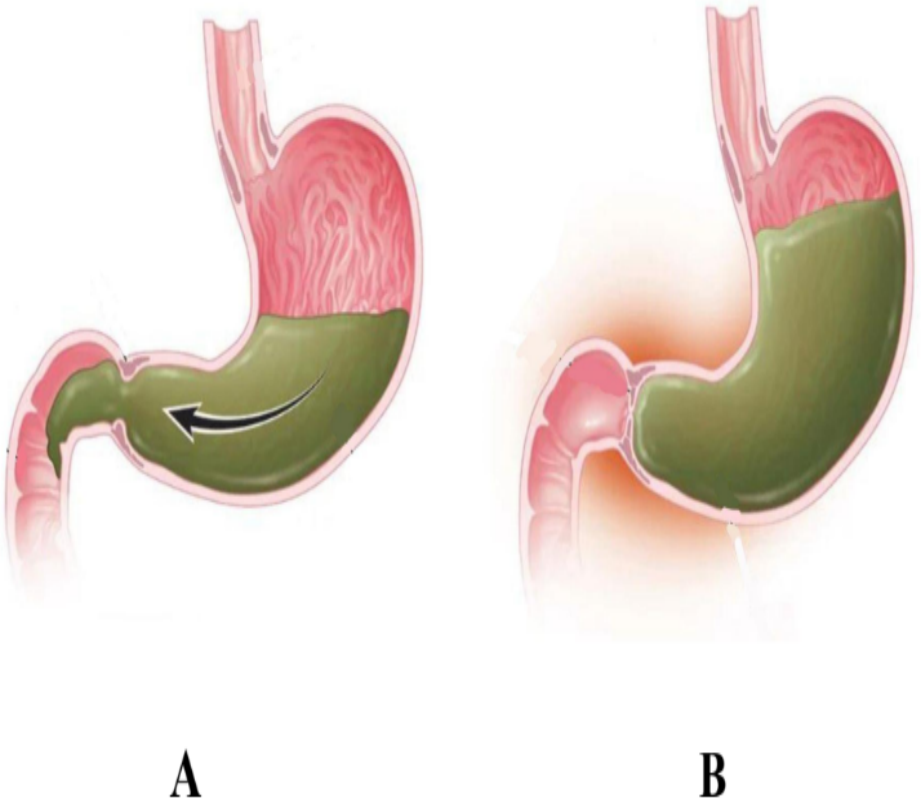
Class-X

Subject- Science(Biology)

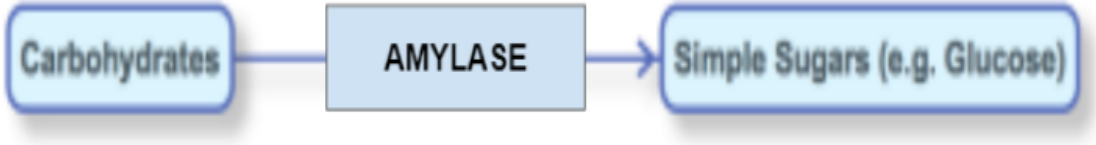
Chapter	Question Type	Question	Marks
Life Process Nutrition in Plants	MCQ	1.In which of the following groups of organisms, food materials are broken down outside the body and absorbed? a) Mushroom, green plants, amoeba b) Yeast, mushroom, bread mould c) Paramecium, amoeba, cuscuta d) Cuscuta, lice, tapeworm	1
	Assertion/Reason	2.Assertion: The living cells perform oxidation of simple food(glucose) to release energy by utilizing O_2 and releasing CO_2. Reason: The cellular respiration involves step by step breakdown of glucose partly in the cytosol and partly in mitochondria.	1
	Short answer question	3.List two differences between 'Holozoic nutrition' and 'Saprophytic nutrition'. Give two examples of these two types of nutrition.	3
	Long Answer Question	4.(a) Draw a diagram of cross section of a leaf and label the following in it: (i) Chloroplast (ii) Guard cell (iii) Lower epidermis (iv) Upper epidermis (b) List the raw materials required for photosynthesis.	5
	Case Based Question	5.Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. This material is taken in the form of carbon	4

		dioxide and water which is converted into carbohydrates in the presence of sunlight and photosynthesis. chlorophyll. Carbohydrates are utilised for providing energy to the plant. a) Write a chemical reaction which occur during photosynthesis? b) In which form of carbohydrates does the plant store energy in them? c) Write two functions of stomata? OR c) What is Chloroplast? Name the pigment responsible for trapping light energy during	
	Answer Key	Ans1. a) Yeast, mushroom, bread mould Ans2. a) Assertion is true and Reason is correct explanation of Assertion Ans3. Saprophytic Nutrition 1. secrete digestive enzymes outside the body. These enzymes hydrolyse organic matter into simple soluble molecules. 2. soluble organic matter is absorbed in the form of fluid through the body surface Eg. Bacteria and fungi Holozoic Nutrition: 1.they break the large organic molecule into smaller ones in their own body with the help of digestive enzymes. 2. the solid or fluid organic food is ingested by the organisms through mouth. Eg. Human being, rabbit etc. (2mark for differences and 1 mark for example) Ans 4. a)4 labelling half mark each (3)	

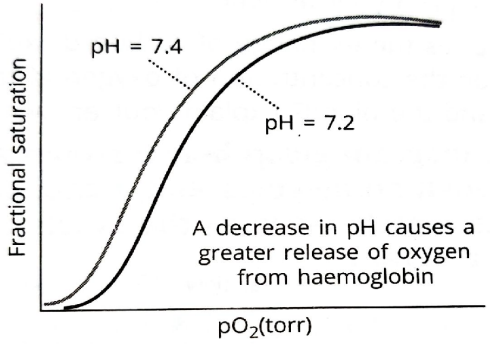
		 *Figure 6.1* *Cross-section of a leaf* b) Carbon dioxide, water are the raw materials required for photosynthesis. Ans5. a)6CO2 +12H2O + Chlorophyll & sunlight +C6H12O6 + 6O2 + 6H2O b) The carbohydrates are stored in the form of starch as the internal energy. c) i) Exchange of gases i.e. oxygen and CO2 ii) Transpiration OR	

		c) Chloroplast is a cell organelle which contains photosynthetic pigment called as chlorophyll which help in the absorption of sunlight. Chlorophyll pigment	
Life Process Nutrition in Animals	**MCQ**	1.Carefully observe the given diagram A & B and identify the correct statement/s for the diagram given below:  	1

		a) The exit of food from the stomach is regulated by the pyloric sphincter muscle b) The exit of food from the stomach is regulated by the anal sphincter muscle c) It releases food in small amounts into the small intestine. d) It releases food in small amounts into the large intestine. i) A & B ii) B & C iii) A & C iv) A & D	
	Assertion and Reason	2.Choose the correct option: A) Both the assertion and reason are correct, and the reason is the correct explanation of the assertion. B) Both the assertion and reason are correct, but the reason is not the correct explanation of the assertion. C) The assertion is correct, but the reason is incorrect. D) The assertion is incorrect, but the reason is correct. Assertion: Villi increases the surface area for food absorption. Reason: The villi are richly supplied with blood vessels.	1
	Short Answer Question	3.Mr. Mitral is suffering from malfunctioning of the pancreas. Digestion of which component of food is likely to be most adversely affected in Mr. Mitral's body?	2
	Long Answer Question	4.A group of students conducted an experiment to study the process of digestion in humans. They collected gastric juice and performed tests to analyse the components present in the juice. a) Mention the components they found in the gastric juice and describe its role in the digestion of food in humans.	5

		b) Why does a piece of bread start tasting sweeter after it is chewed for sometime?	
	Case Based Question	5.The digestion process is a series of reactions of food with the digestive hormones and juices. This starts right from the oral cavity. a) Create a flowchart showing the fate of carbohydrates and fat during digestion in the human alimentary canal. b) Mention the enzymes acting at each stage in the flow chart.	4
	Answer Key	1.iii) A & C 2. B) Both the assertion and reason are correct, but the reason is not the correct explanation of the assertion. 3. Digestion of fats 4. a) Gastric juice is a combination of hydrochloric acid, a protein digesting enzyme called pepsin, and mucus. Role: The hydrochloric acid present in gastric juice creates an acidic medium which facilitates the action of the protein digesting enzyme pepsin. b) Salivary amylase in saliva converts carbohydrates present in the bread into simple sugars. 5. A) Both the assertion and reason are correct, and the reason is the correct explanation of the assertion 6.  	

			
Life Process Respiration	**MCQ**	1.The breakdown of pyruvate to give carbon dioxide, water and energy takes place in a) Cytoplasm b) Chloroplast c) Mitochondria d) Nucleus	1
	Assertion/Reason	2.Two statements are given for the following questions. One is labelled as ASSERTION (A) and the other one is labelled as REASON (R).Select the correct answer to the following questions from the codes (a), (b), (c) and (d) as given below: (a) Both A and R are true and R is the correct explanation for A. (b) Both A and R are true and R is not the correct explanation for A. (c) A is true but R is false. (d) A is false but R is true. **Assertion**: Yeast shows anaerobic respiration which is used in making bread. **Reason**: Muscle fatigue happens due to accumulation of lactic acid.	1
	Short Answer Question	3.The air entering our nose is generally cold and contains dust particles. How is the air made warm and free of dust particles inside the respiratory tract?	2
	Long Answer Question	4.Starting from the nasal cavity, describe the path of air from its entrance in the nasal cavity to its utilization in the air sacs.	5
	Case Based question	5.Raghav's mother who was in good health condition about a month ago, has started feeling tired all the time with some breathing issues. Her stamina has gone down considerably and she is finding difficult to carry out her daily routine tasks. Her doctor prescribed a blood test which revealed that her haemoglobin level was 7.2g/dL a. The normal range of haemoglobin for a healthy adult female is (i) 15-17.5 grams per deciliter. (ii) 12- 15.5 grams per deciliter. (iii) 13.5- 17.5 grams per deciliter.	4

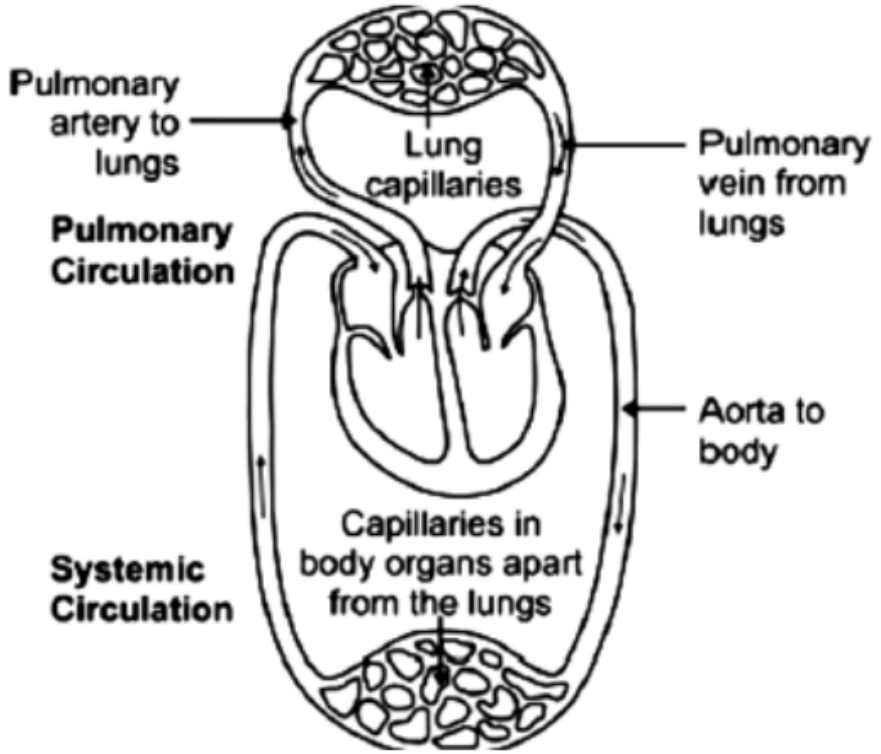
		(iv) 9-10 grams per deciliter . b. Low level of iron in blood, is termed as (i) Hypoglycemia (ii) anaemia iii) ketonuria (iv)hyperglycemia. c. Raghav's mother was feeling tired all the day because (i) she cannot breathe enough oxygen (ii) of decreased level of oxygen in blood due to low haemoglobin (iii) of decreased level of carbon dioxide in blood due to low haemoglobin (iv) All of these. d. Which of the following foods is a rich source of iron? (i) Tea (ii) Spinach (iii) Carrot (iv) Ginger e. The given graph is showing the effect of pH on haemoglobin.  Which of the following is incorrect related to the low pH of blood? (i)The blood is alkaline when the pH decreases. (ii) Blood pH is decreased when body cannot remove enough CO_2 . (iii) This condition occurs if one has severe respiratory problem. (iv)Clinical consequences of decreasing blood pH are drowsiness, stupor and coma.	
	Answer Key	1.(a) Cytolasm 2. (b) Both A and R are true and R is not the correct explanation for A.	

		3. Air enters through the nostrils of the nose and is partially filtered by the nose hairs, then flows into the nasal cavity. The nasal cavity is lined with epithelial tissue, containing blood vessels, which help warm the air; and secrete mucous, which further filters the air. 4. The pathway of air into the body: Air enters the body via the nostrils or mouth. Air then travels down the throat via the larynx and trachea. Air goes into the lungs via the main-stem bronchi. One main-stem bronchus ends in the left lung and one in the right lung In the lungs, the main-stem bronchi divide into smaller bronchi. The smaller bronchi divide into even smaller tubes (bronchioles). Bronchioles lead to tiny air sacs (alveoli) in which the trade of oxygen and carbon dioxide occurs. Oxygen from inhaled air combines with the hemoglobin present in the blood and travels throughout the body to reach every cell. 5.a) ii 12.0 to 15.0 grams per deciliter b) iii Anaemia c) (ii) of decreased level of oxygen in blood due to low haemoglobin d) (ii) Spinach e) (i)The blood is alkaline when the pH decreases.	
Life Process Transportation of Substances	**MCQ**	1.Identify the phase of circulation which is represented in the diagram of heart given below. Arrows indicate contraction of the chambers shown.	1

		 (a)Blood transferred to the right ventricle and left ventricle simultaneously. (b)Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously. (c)Blood transferred to the right auricle and left auricle simultaneously. (d)Blood is received from lungs after oxygenation and is received from various organs of the body.	

	Assertion/Reason	2.Assertion (A) : Human heart is four-chambered. Reason (R) : Vena cava is the only artery that supplies deoxygenated blood to the heart. 3. Assertion: The average number of heart beat of a person at rest is about 80 per minute. Reason: One contraction and relaxation of the heart constitutes a complete heart beat.	1
	Short Answer Question	4.Trace the movement of oxygenated blood in the body.	2
	Long Answer Question	5.(a)Draw a schematic representation of transport and exchange of oxygen and carbon dioxide during transportation of blood in human beings and label on it: Lung capillaries, Pulmonary artery to lungs, Aorta to body, Pulmonary veins from lungs. (b) What is the advantage of separate channels in mammals and birds for oxygenated and deoxygenated blood?	5
	Case Based Question	6.iBlood transport food and waste materials in our bodies. It consists of plasma as a fuid medium. A pumping organ is required to push the blood around.The blood fows through the chambers of the organ in a specific manner and direction. While flowing throughout the body, blood exert a pressure against the wall or a vessel. i)Which life process is depicted by the above passage? (a) Respiration (b) Digestion (c) Transportation (d) Excretion ii)Name the blood pumping organ. (a) Lungs (b) Heart (c) Kidney (d) Liver iii)Oxygenated blood from lungs enters left atrium through ..... (a) Vena cava (b) Pulmonary artery (c) Pulmonary vein (d) Aorta iv)Deoxygenated blood leaves through the right ventricle through ..... (a) Vena cava (b) Pulmonary artery (c) Pulmonary vein (d) Aorta v)Which of the following statements is true about heart?	4

		(i) It is a hollow muscular organ. (ii) It is a four-chambered having three atria and one ventricle. (iii) It has different chambers to prevent the oxygen - rich blood from mixing with the blood containing carbon dioxide. (iv) Arteries always carry blood away from the heart. (a) (i) and (ii) (b) (ii) and (iii) (c) (i), (ii) and (iii) (d) (i), (iii) and (iv)	
	Answer Key	1. (a)Blood transferred to the right ventricle and left ventricle simultaneously. 2. A is true but R is false 3. A is false but R is true 4. The oxygenated blood then leaves the lungs through pulmonary veins, which return it to the left heart, completing the pulmonary cycle. This blood then enters the left atrium, which pumps it through the mitral valve into the left ventricle.Left ventricle pumps oxygenated blood to different parts of the body. 5. a)In human body, gaseous exchange occurs between tissue cells and the capillary blood through intestinal fluid and this is called internal respiration. The exchange occurs due to difference in partial pressure of the gases. Partial pressure is the pressure contributed by an individual gas in a mixture of gases. It is represented as pO2 for oxygen and pCO2 for carbon dioxide. Gases diffuse from high partial pressure to low partial pressure.	



b) Separation of oxygenated and deoxygenated blood allows a highly efficient supply of oxygen to the body. This is useful in animals that have high energy needs, such as birds and mammals, which constantly use energy to maintain their body temperature.

6. i (c) Transportation
Ii (b) Heart
Iii (c) Pulmonary vein
Iv (b) Pulmonary artery
V d) (i), (iii) and (iv)

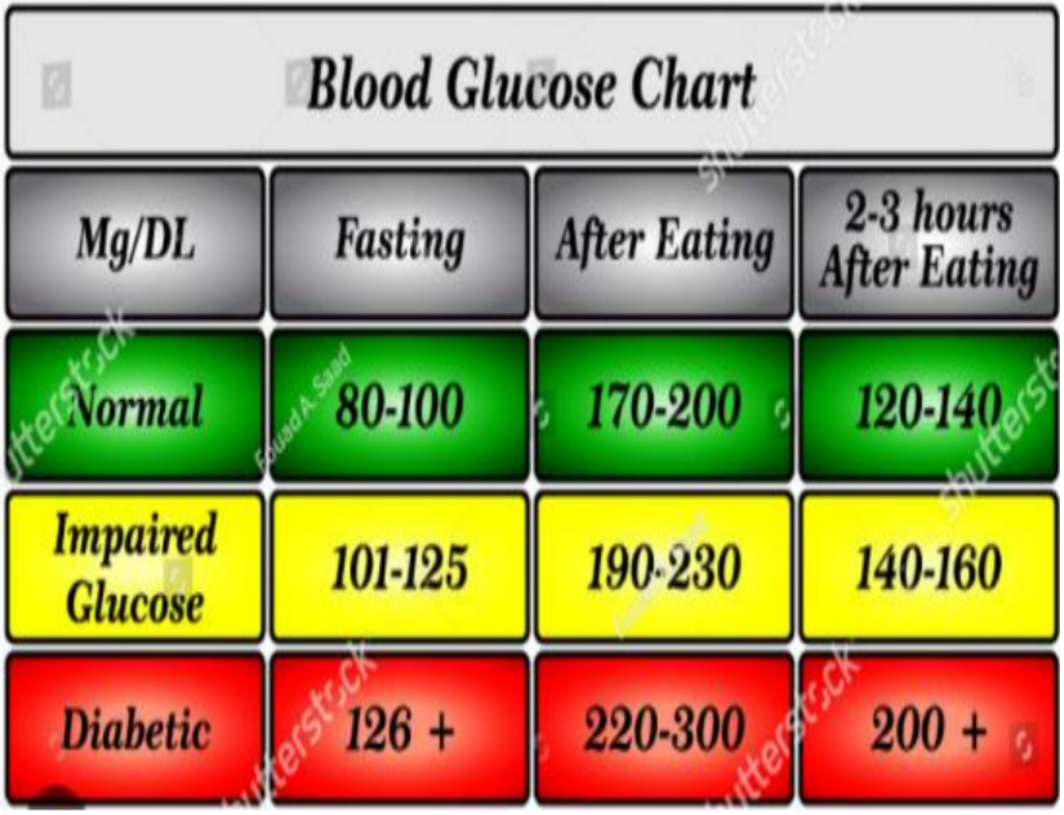
Life Process Excretion	**MCQ**	1.Many unicellular organisms remove the wastes by simple diffusion from the body surface into the surrounding water. Which among the following organisms use this method for excretion? a) Earthworm b)Amoeba c)Squid d)Molluscs	1
	Assertion/Reason	Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (a) Both 'A' and 'R' are true and 'R' is correct explanation of the Assertion. (b) Both 'A' and 'R' are true but 'R' is not correct explanation of the Assertion. (c) 'A' is true but 'R' is false. (d) 'A' is false but 'R' is true. 2.Assertion: Human body produces highly toxic substances, which if not eliminated may cause the death. Reason: Excretory system removes nitrogenous waste from the body. 3.Assertion: Plants excrete various waste products during their life processes. Reason: They produce wastes like urea in humans.	1
	Case Based Question	**4.Read the paragraph and answer the following:** Many unicellular organisms remove metabolic waste products by simple diffusion from body surface into the surrounding. While complex multicellular organisms have specialized organs for excretion.Kidneys remove poisonous substances such as urea, waste salts and excess water from bloodand excrete them as urine. Nephron is a unit of filtration in kidneys that filters waste material. It selectively reabsorbs or excretes water with the help of capillaries that surround it. In case of kidney failure artificial kidney can be used. i.What is the benefit of selective absorption? ii. The excretory system of humans include: a) Kidney, ureter, urinary bladder, urethra b) A pair of kidneys, pair of ureters, pair of urinary bladder, urethra c) A pair of kidneys, pair of ureters, urinary bladder, urethra d) A pair of kidneys, ureters, urinary bladder, pair of urethra	4

		iii. Which of the following processes occur in the part shown below? a) Tubular secretion b) Tubular reabsorption c) Ultra filtration d) Selective secretion 5.**Read the given passage and answer the following questions:** Plants release gaseous wastes such as carbon dioxide and water vapor produced during respiration at night and oxygen produced during photosynthesis in daytime through stomata in leaves and lenticels found in stems. Plants get rid of excess water produced as a waste during respiration by the process of transpiration. Some species of plants exude water through stomata, while others through hydathodes. Plants also store waste substances in old xylem as resins and gums. Gums are the degradation products of internal plant tissues (mostly cellulose), while resins are formed as the oxidation products of various essential oils. a.List the gaseous waste products released by plants. b.Even the waste products from the plants are beneficial to us.Justify the statement with an example. c. How do leaves of plants help in excretion? Or List any two methods by which plants remove the waste products other than the gaseous products.	
	Answer Key	1.(b) Amoeba 2. (b) Both ‘A’ and ‘R’ are true but ‘R’ is not correct explanation of the Assertion. 3.. (c) ‘A’ is true but ‘R’ is false. 4.i.Selective reabsorption in nephron helps in maintaining the pH and ionic balance of the body fluids. ii. d) A pair of kidneys, ureters, urinary bladder, pair of urethra iii. c) Ultra filtration 5.a.Oxygen(result of photosynthesis) Carbon dioxide (result of respiration) Water vapour (as a result of transpiration) b.Plants release oxygen at the time of photosynthesis,which is essential for	

		survival of all living organisms.Some waste products like gum, resin and latex from rubber are also very useful. c.Many plants store waste materials in the cellular vacuoles. When old leaves fall, waste materials are excreted along with the leaves.Gums,Resins,Tannin-are also some products secreted by the plants through the bark or old xylem. Or Many plants store waste materials in the cellular vacuoles. When old leaves fall, waste materials are excreted along with the leaves. Metabolism in plants generates organic by-products like oils,gums,resins etc….stored in plant parts like stem, bark,leaves etc…	
Control aand Co- ordination	**MCQ**	1.Reflex actions are mediated through (a) Aorta (b) Brain (c) spinal Cord (d) receptors 2.Which of the following statement is true about Synapse? (a) gap between two bones (b) Gap between two neurons (c) gap between two muscle cells (d) gap between muscle and bone. 3.The opening and closing of stomata in response to changes in light intensity and environmental conditions is primarily controlled by: A) Gibberellins B) Auxins C) Ethylene D) Abscisic acid (ABA)	1
	Assertion/Reason	4.Assertion(A): Cyton region of nerve fibre collects information for the brain. Reason (R): Nerve fibres can either have or lack myelin sheath. 5.Assertion(A) : The spinal nerves are 31 in number. Reason (R) : Spinal nerves only have sensory neurons in them	1

		6.Assertion (A) : Adrenaline is released in response to stressful or dangerous situations. Reason (R) : Adrenaline prepares the body for a rapid response in stressful or dangerous situations by making heart beat faster and redirecting blood flow to muscles. 7.Assertion (A) : Insulin is a crucial hormone which regulates blood sugar level in human body. Reason (R) : Insulin is essential for regulating blood sugar levels as it enables cells to take up and utilize glucose, reducing the amount of glucose in the blood stream. 8.Assertion: Cytokinins are important for cell division and growth in plants Reasoning: Cytokinins promote the cell division process by stimulating the synthesis of proteins necessary for cell cycle progression. 9.Assertion: Gibberellins promote stem elongation in plants. Reasoning: Gibberellins stimulate cell division and cell elongation in the stem.	
	Shoet answer Question	10.Mary is a 14-year-old girl who has been experiencing some noticeable changes in her body over the past year. She has grown taller, her hips have widened, and she has developed breast tissue. Mary's parents are concerned about these changes and have scheduled an appointment with a doctor. Explain the hormonal changes that Mary is experiencing and the role of these hormones in her development. 11.Discuss the role of gibberellins in plant growth, with a focus on their involvement in seed germination and stem elongation. How do gibberellins interact with other plant hormones?	2

	Case Based Question	12.Rather than having to think about the sensation of heat, if the nerves that detect heat were to be connected to the nerves that move muscles in a simpler way, the process of detecting the signal or the input and responding to it by an output action might be completed quickly. Such a connection is commonly called a reflex are. Reflex arcs are formed in spinal cord tself, although the information input also goes on to reach the brain. Of course, reflex arcs have evolved in animals because the thinking process of the brain is not fast enough. In fact, many animals have very little or none of the complex neuron network needed for thinking. So it is quite likely that reflex arcs have evolved as efficient ways of functioning in the absence of true though processes. After going through the paragraph, answer the questions (a) to (d) that follow: (a) Which action gives the fastest response? (1) Sight of a snake (2) hand coming in contact with hot objects. (3) Light flashed over the eyes (4) Both 2&3 (b) What is the name of the fastest response? (c) What is reflex arc? Or (d) What are the components of reflex arc? 13.Mr. Patil was complaining about frequent urination, pain in legs and a frequent weight loss to his doctor. The doctor advised Mr.Patil to take a test of blood for blood glucose levels. By seeing the blood report, the doctor diagnosed that Mr. Patil was having an elevated level of blood glucose.	4

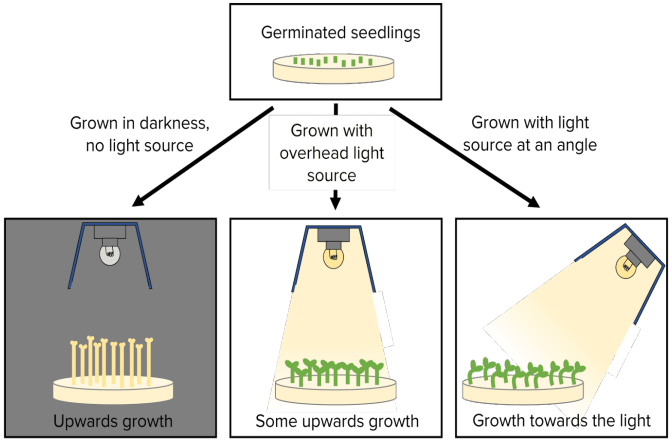


Blood Glucose Chart			
Mg/DL	Fasting	After Eating	2-3 hours After Eating
Normal	80-100	170-200	120-140
Impaired Glucose	101-125	190-230	140-160
Diabetic	126 +	220-300	200 +

Read the above text and study the above blood test report of Mr. Patil related to blood glucose levels, answer the following questions:

(i) Name the disease from which Mr. Jain is suffering? Mention the hormone due to imbalance of which he is suffering from this disease.
(ii) Identify the Gland that secretes it and mention the function of this hormone.
(iii) Explain how the time and amount of secretion of this hormone is regulated in human system.
(iv) What would the doctor recommend Mr.Patil to maintain his normal Glucose level?

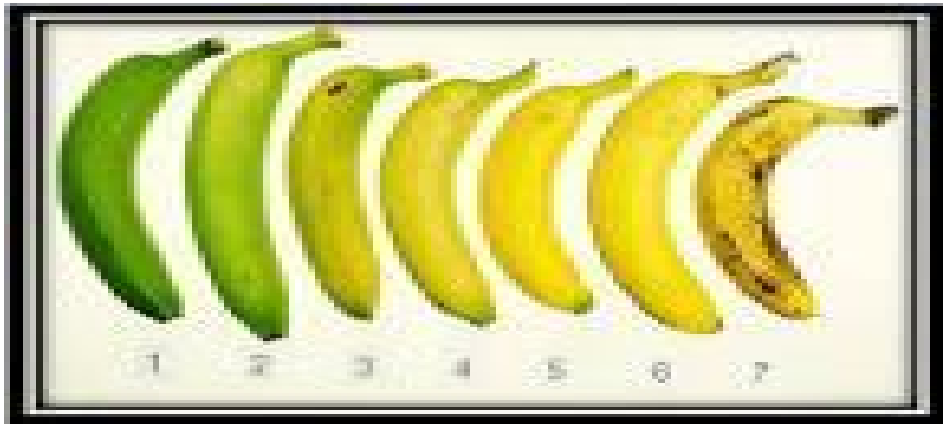
14.Line 3 petri dishes with moist cotton wool or filter paper. Put 10 cress or mustard seeds into each petri dish and leave them in a warm place to germinate. Once germinated, measure the height of the seedlings using a ruler. Put one petri dish in a dark cupboard or room with no light source, one under an overhead light source and one under a light source at an angle and leave for a week. Measure the height of the seedings again and observe how they have grown under each light condition. Use the same number of seeds in each dish. Use the same type of seeds from the same packet. Keep the temperature the same for all the petri dishes. Give each petri dish the same amount of water.



1. Which hormone causes plant roots to grow in the direction of gravity.

2.Name two variables you would need to keep the same when investigating the effect of direction of light on the growth of plant seedlings.

3.Give two ways that auxins are used by farmers.

		4.What do we call the movement of seedlings when they grow towards light? 5. What is geotropism? Give an example of positive geotropism? 15.  1).Observe the above given picture and name the plant hormone responsible for the above changes. 2)Mention two characteristic features of this hormone. 3) Can ethylene be used for artificial fruit ripening? 4) Name any two growth inhibiting hormones. 5Q) What is the role of abscisic acid in the regulation of leaf abscission?	

	Answer Key	**MCQ** 1.Ans.(c) Spinal Cord Explanation: Reflex impulse moves from the receptor organ to the spinal Cord and then to the effector organ like muscles 2.(b) Gap between two neurons 3.b Auxins **Assertion/Reason** 4.Answer: d. A is wrong, but R is correct Explanation: Dendrites of the nerve fibre collect information for the brain 5.Answer: (c) A is correct, but R is wrong Explanation: Spinal nerves are mixed nerves 6.Answer: a. The Assertion and Reason are both correct and Reason is the correct explanation of Assertion . 7.Answer: a. The Assertion and Reason are both correct and Reason is the correct Explanation. 8. Answer: a. The Assertion and Reason are both correct and Reason is the correct Explanation. 9. Answer: a. The Assertion and Reason are both correct and Reason is the correct Explanation. **Short Answer Question** 10 Answer: Mary is experiencing the onset of puberty, which involves several hormonal changes and is a normal part of human development. The following hormonal changes are occurring in her body:	

		11.Seed Germination Some seeds that are sensitive to light such as tobacco and lettuce exhibit poor germination in the absence of sunlight. Germination begins rapidly if the seeds are exposed to the sunlight. If the seeds are treated with gibberellic acid, the light requirement can be overcome. Elongation of the Internodes Internodes elongation is the most pronounced effects of gibberellins on plant growth. In many plants such as dwarf pea and maize, the genetic dwarfism can be overcome. For example, the dwarf pea plants have expanded leaves and short internodes. But the internodes expand and look like tall plants when treated with gibberellin. Case Studies 12.Ans. (4) Both 2&3 Ans. (2) Reflex action Ans. (1) Reflex arc is nerve based pathway performed by an impulse from the receptor of stimulus to the effector organ through central nervous system without consulting the will of the individual. Or (d) Stimulus –Receptor-Sensory neuron-relay neuron-motor neuron-effector neuron-Response 13 Answer. (i) Mr. Patil is suffering from the Disease-Diabetes and the hormone due to imbalance of which he is suffering from this disease is Insulin. (ii) the Gland that secretes Insulin is Pancreas. The blood glucose level is regulated by insulin hormone secreted by the pancreas. (iii) Feedback Mechanism - Cells of pancreas secrete insulin hormone when level of blood glucose level increases in the blood. Insulin regulates the blood glucose level and its secretion gets reduced when blood glucose level falls down. (iv)) He should take care of his diet and should exercise regularly to maintain his normal glucose level. He should take Insulin injections regularly as doses prescribed by doctor.	

<table>
<tr>
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<td>14. 1. Auxin
2.Temperture, amount of water and light intensity
3. Weed killers and rooting powders
4.Phototropism
5.Movement of plant parts in response to gravity is known as geotropism. The growth of plant roots is an example of geotropism.

15 Answer-
1.Ethylene
2.Ripening of fruits and senescence
3.Yes
4.Ethlene and Abscisic acid
5. Wilting of leaves</td>
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<td>Ch-8 How Do Organism reproduce?</td>
<td>MCQ</td>
<td>1.Match the following:-

<table>
<tr><th></th><th>A</th><th></th><th>B</th></tr>
<tr><td>1.</td><td>Planaria</td><td>a</td><td>Multiple fission</td></tr>
<tr><td>2.</td><td>Plasmodium</td><td>b</td><td>Budding</td></tr>
<tr><td>3.</td><td>Spirogyra</td><td>c</td><td>Regeneration</td></tr>
<tr><td>4.</td><td>Yeast</td><td>d</td><td>Fragmentation</td></tr>
</table>

a) 1 - b, 2 - a, 3 - d, 4 - c
b) 1 - c, 2 - a, 3 - d, 4 - b

c) 1 - d, 2 - c, 3 - a, 4 - b
d) 1-d, 2 - c, 3 - b, 4 – a</td>
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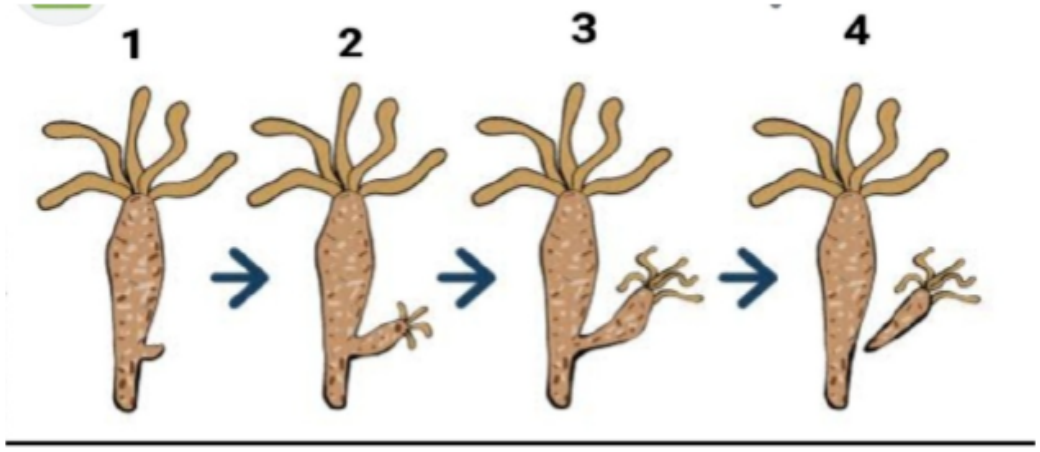
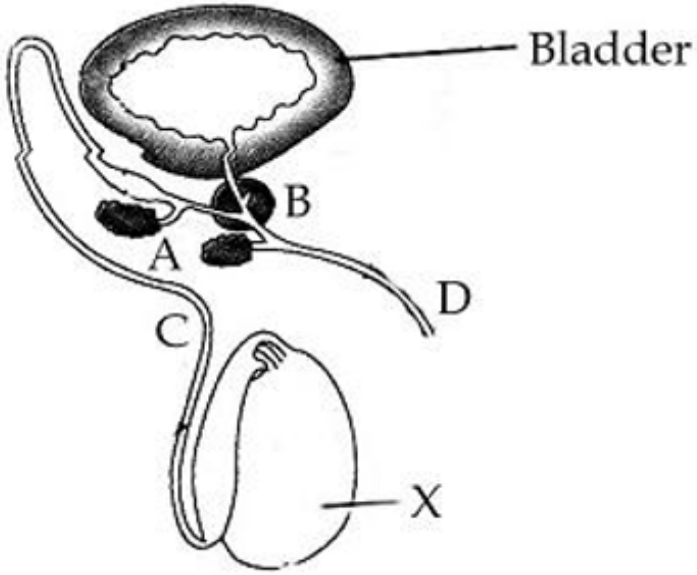
		2.Sometimes, a yellow powdery substance sticks to your hand when you touch a flower. What is this substance called? a. Petal b. Pistil c. Pollen Grain d. Stamen	
	Assertion/Reason	Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (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 1.Assertion : The offsprings produced through asexual reproduction are called as clones. Reason : These offsprings are genetically and morphologically similar. 2.Assertion (A): Sexual reproduction results in greater genetic variation among offspring. Reason (R): Sexual reproduction involves the fusion of gametes from two different parents, leading to genetic recombination. 3.Assertion (A) : Flowers are structures of sexual reproduction. Reason (R) : Different type of embryological process occur inside the flower	1
	Short Answer Question	1.Given below is the diagram of budding in hydra. Observe carefully and answer the questions which follow .	3

		 a) Copy the given diagram and label 1,2,3 & 4 . b) Name the mode of reproduction in the following organisms, i) planaria ii) Leishmania c) What is regeneration? 2.Observe the given diagram carefully and answer the following questions:	

		 a) Name the fungus given in the above diagram. b) Which is the asexual mode of reproduction adopted by this fungus?	

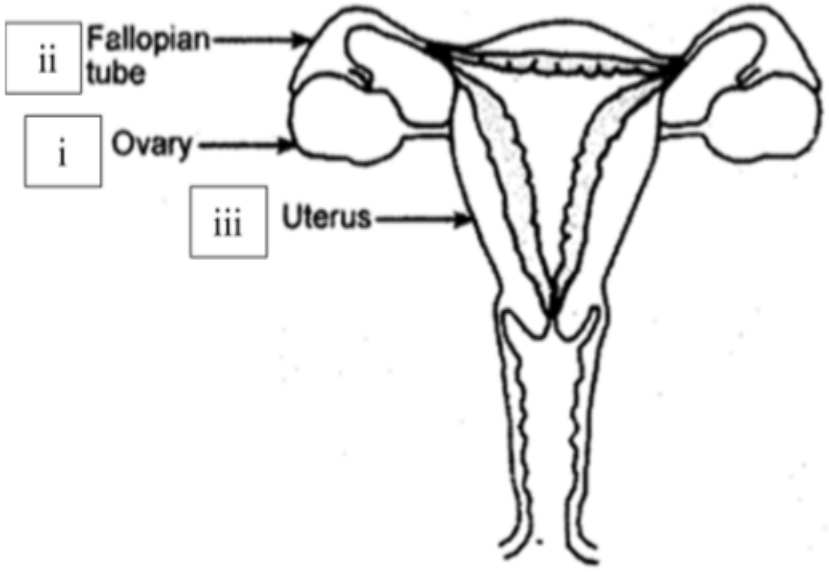
		c) What are the advantages of this mode of reproduction? d) How does this mode differ from binary fission? 3.Daksh was very inquisitive in nature and used to ask a number of questions from his mother. One day he saw a beautiful hibiscus flower and its various parts. He asked his mother to explain the importance of The swollen bottom part. Answer the question on the basis of your understanding and related studied concepts. 4.Name the two reproductive parts of a mustard flower which contain the germ cells. State the location and function of its female reproductive part. 5.What is placenta? Explain its function in humans.	
	Long Answer question	1.All human beings undergo a sexual mode of reproduction. In this process, two parents are involved in producing a new individual. Offspring are produced by the fusion of gametes (sex cells) from each parent. Hence, the newly formed individual will be different from parents, both genetically and physically. Human reproduction is an example of sexual reproduction. In human beings, both males and females have different reproductive systems; hence, they are known to exhibit sexual dimorphism. Males have testes- also called testicles, while the females have a pair of ovaries. (a) What provides nutrition to human sperms? State the genetic constitution of a sperm. (b) Mention the chromosome pair present in a zygote which determines the sex of (i) a female child and (ii) a male child.In the diagram of the human male reproductive system:	5

		2.In the diagram of the human male reproductive system:  (a) Label A and B. (b) Name the hormone produced by X. What is the role of this hormone in human male? (c) Mention the name of substances that are transported by tubes C and D. 3.(a)Draw a sectional view of human female reproductive system and label the part where: (i) Eggs develop (ii) Fertilization takes place (iii) Fertilized eggs get implanted (b) State the changes that take place in the uterus when: (i) Implantation of embryo has occurred. (ii) Female gamete/egg is not fertilised	
	Case based Question	1.Tissue culture is the growth of tissues or cells in an artificial medium separate from the parent organism.This technique is also called micropropagation. This is typically facilitated	4

		via use of a liquid, semi-solid,or solid growth medium, such as broth or agar. Tissue culture commonly refers to the culture of animal cells and tissues, with the more specific term plant tissue culture being used for plants. The term "tissue culture" was coined by American pathologist Montrose Thomas Burrows.This is possible only in certain conditions. It also requires more attention. It can be done only in genetic labs with various chemicals.There are several advantages to using the tissue culture process.Tissue culture is an advanced technique and requires some advanced knowledge and practice for anyone to get started in the field. * The new plantlets can be grown in a short amount of time. * Only a small amount of initial plant tissue is required. * The new plantlets and plants are more likely to be free of viruses and diseases. * The process is not dependent on the seasons and can be done throughout the year. i) Which part of the organism is used for the propagation intissue culture? ii) Why is tissue culture also known as micro propagation? iii) Write any two advantages of tissue culture. iv) Who coined the term tissue culture? v) What is the main disadvantage of tissue culture? 2.Angiosperms are plants that produce flowers and bear their seeds in fruits. They are the largest and most diverse group within the kingdom Plantae, with about 300,000 species. Angiosperms represent approximately 80 percent of all known living green plants. Examples range from the common dandelion and grasses to the ancient magnolias and highly evolved orchids. The flowering plants reproduce by sexual reproduction. The flowers enclose the reproductive organs or parts of a plant. Therefore, flowers are called the reproductive organs of plants. Some flowers contain male and female reproductive organs in separate flowers whereas flowers contain both male and female reproductive organs in the same flower. a) Give examples for any two flowers in which either stamen or carpel is present b) What is pollination? c) Name the part of the flower that develop after fertilization into (i) Seed	

		(ii) Fruit	
	Answer Key	MCQ 1. b 2. c Assertion/Reason 1.(c). A is false but R is true 2. (a) Both A and R are true and R is the correct explanation of A. 3. (a) Both A and R are true and R is the correct explanation of A. Short Answer Question Answer 1.a) 1 - small projection called bud arises 2 - Bud grows 3 - bud matures 4 - bud detaches b) i) regeneration ii) binary fission c) Ability to regrow lost parts by an organism. 2.Answer: a) Rhizopus/ Bread mould b) Spore formation c) More offsprings are produced to compensate the loss An extra covering called cyst to protect the spore, which helps to tide over adverse conditions. d) Binary fisson - mother cell undergoes division only once, Only two offsprings are produced Spore formation - mother cell undergoes division many times, more offsprings are produced. 3.Answer The ovary is a part of the female flower known as the gynoecium. The ovary is a hollow cavity that contains the ovules. The ovary develops into the fruit and the ovules are formed into seeds. Each ovule contains an egg cell for reproduction.	

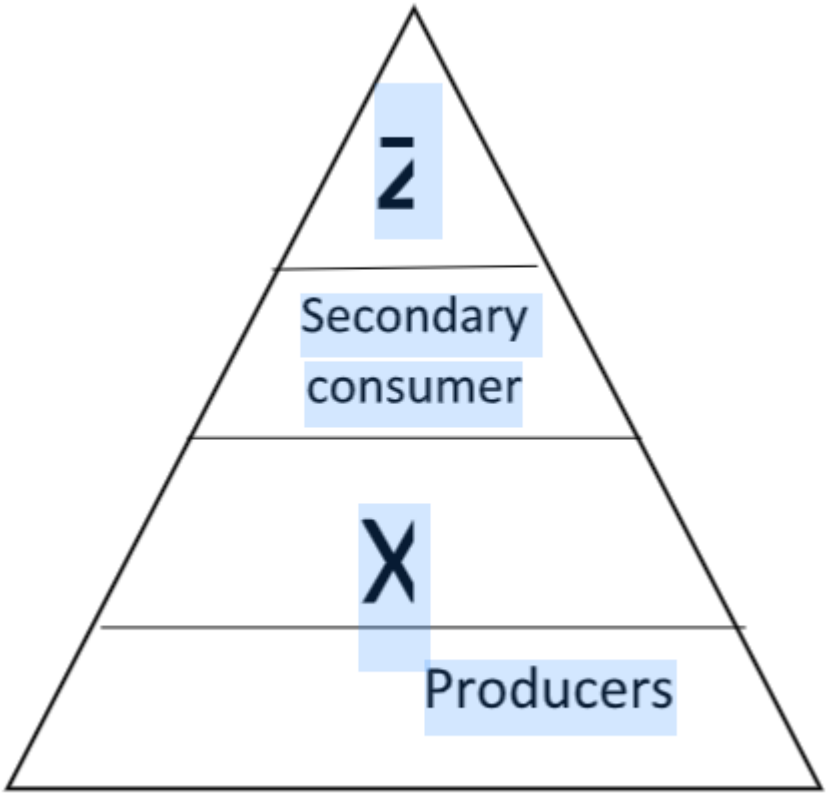
		4.Answer The two reproductive parts of hibiscus flower which is bisexual flower are stamen and carpel. The carpel is the female reproductive organ located at the center of a flower. • It consists of ovary, style and stigma. • The ovary is the swollen part at the bottom of the carpel. • The elongated part in the centre of the carpel is the style. • The stigma is sticky so that it can trap pollen grains easily. • Pollen tube that grows from the pollen grain to the ovary aids fertilisation 5.Answer Placenta is an intimate connection between fetus and uterine wall of the mother to exchange the materials. It is a disc shaped structure embedded in the uterine wall. It contains villi on embryo's side and blood spaces towards mothers' side. Blood spaces surround villi. Placenta performs the following functions: All nutritive elements from maternal blood pass into the fetus through it. Placental helps in respiration, i.e., supply of oxygen and removal of CO_2 from fetus to maternal blood. Fetal excretory products diffuse out into maternal blood through placenta and are excreted by mother. Placenta also secretes hormone. Long Answer Questions 1.a) The secretions of seminal vesicles and prostate gland provides nutrition to the human sperms and also make their further transport easier. The genetic constitution of a sperm can be 50% have X chromosome and 50% have Y chromosome. (b) (i) XX – Female child (ii) XY – Male child 2.Answer- (a) A-Seminal Vesicle B-Prostate gland.	

		(b) Testosterone; controls gamete formation and develops secondary sex organs. (c) (a) C-Sperms, (b) D-Sperms/semen and urine. 3.a  (b) (i)Implantation is the close attachment of the blastocyst (young multicellular embryo) to the uterine wall. It is followed by a number of developmental changes in the thickened wall of uterus. An intimate connection between the fetal membrane and the uterine wall called placenta is formed. This is a disc which is embedded in the uterine wall. The placenta serves as the nutritive, respiratory and excretory organ of the fetus. (ii) When the female gamete/egg is not fertilised, this lining is not needed any longer. So,the lining slowly breaks and comes out through vagina as blood and mucus. This cycle takes place every month and is known as menstrual cycle.	

		Case Based 1.Answers: i) tissues or cells ii) Because in tissue culture, the propagation is done by using microscopic structures called cells or tissues. iii) Any two points marked ' * ' iv) Montrose Thomas Burrows v) It can be done only in genetic labs with various chemicals 2.Answer A. Hibiscus , Mustard B . Transfer of pollen grains from stamen to stigma C.(i) Ovule (ii) Ovary	
Ch-9 Heredity	**MCQ**	1.A pure tall plant is crossed with a pure dwarf plant. What type of offspring will be produced in the F1 generation? a) pure tall b) pure dwarf c) hybrid tall d) pure tall and pure dwarf 2. In a dihybrid cross four phenotypes form in the ratio of 9:3:3:1, because of- a) dominance of one phenotype in each pair of contrasting traits b) independent assortment of the genes of contrasting traits c) crossing over of genes d) mixed effect of dominance and independent assortment.	1
	Assertion/Reason	3.Assertion: The phenotype of a dominant allele will be expressed even in the presence of another allele of that gene. Reason: It is represented by a capital letter, e.g., L	1

	Short Answer Question	4.How does the creation of variations in species promote survival?	2
	Case Based Question	5.Read the following passage and answer the given questions: A hybridization experiment was carried out by Mendel where he crossed tall and dwarf pea plants to study the inheritance of one gene. He collected the seeds produced as a result of this cross and grew them to generate plants of the first hybrid generation. This generation is also called the Filial1 progeny or the F1. Mendel observed that all the F1 progeny plants were tall, like one of its parents; none were dwarf. He made similar observations for the other pairs of traits – he found that the F1 always resembled either one of the parents, and that the trait of the other parent was not seen in them i. Mendel's principle of segregation was based on the separation of alleles in the garden pea during- a) Embryonic development b) Seed formation c) Gamete formation d) Pollination ii. The characters which appear in the first filial generation are called (a) recessive characters (b) dominant characters (c) lethal characters (d) non-mendelian characters.	2
	Answer Key	1. c) hybrid tall 2. b) independent assortment of the genes of contrasting traits 3. b. Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A). 4. Environmental changes cause variations in species. It promotes stability of the population of various species by preventing their extinction in adverse conditions. Thereby, it helps in the survival of a species. 5. i. c) gamete Formation ii b) dominant character	

Ch- Our Enironment	**MCQ**	1.We should reduce the use of the plastic bags, bottles etc. Because: a) They are not durable b) They are non biodegradable c)They are made of toxic materials d) They react with the atmospheric gases	1
	Assertion/Reason	2.Assertion (A) : Decomposers act as cleaning agents of the environment. Reason (R) : The decomposers recycle waste material in the hydrosphere.	1
	Short Answer question	3.To protect the food plants from insects, an insecticide was sprayed in small amounts but it was detected in high concentration in human beings. How did it happen? 4.Write the appropriate names of the trophic levels Z and X the figure given below	2

			
	Case Based Question	5.Read the following and answer the questions : The atmosphere is a blanket of air and a precious natural resource for sustaining life on the Earth. Unfortunately, human activities based on national/personal interests are causing harm to this common resource, notably by depleting the fragile ozone layer, which acts as a protective shield for life on the Earth. Ozone molecules consist of three oxygen atoms, Ozone molecules are exceeding rare: fewer than ten in every million molecules of	4

		air. However, for nearly a billion years, their presence in the atmosphere has played a vital role in safeguarding life on Earth. The ozone in the troposphere (up to 110 kilometres above the Earth's surface) is 'bad' ozone which can damage lung tissues and plants. But about 90 per cent of ozone found in the stratosphere (between 10 and 40 kilometres above the Earth's surface) is "good" ozone which plays a beneficial role by absorbing dangerous ultraviolet (UV-B) radiations from the Sun. Without this beneficial ozone layer, humans would be more susceptible to certain diseases due to the increased incidence of ultraviolet rays from the Sun. i)Ozone molecules consists of: (a) Three oxygen atoms only (b) two oxygen atoms only (c) Only one atom of oxygen (d) None of the above ii)Depletion of ozone layer is mainly due to (a) Use of CFC's (b) Use of halogens (c) Both (a) and (b) (d) None of the above iii)UV rays can cause diseases in humans like (a) Skin cancer only (b) Cataract only (c) Lung cancer (d) Both (a) and (b) iv)Ozone holes are more pronounced at the : (a) Equator (b) Tropic of cancer (c) Tropic of Capricorn (d) Poles	
	Answer Key	1.b 2.Assertion is write but reason is not 3. Insecticides are chemicals – Accumulation of chemicals - Bio magnification. 4. X – Primary consumers Z – Tertiary consumers. 5. i) a ii) c iii) d iv) d	