SMART TUTORIAL CENTRE

WARNING

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Ordering Information:

As per new reduced syllabus of BOSEM

BIOLOGY

Chapter -13 Life-Processes

Q1. Distinguish between arteries and veins.

Ans:

Arteries	*Veins*
(i) They carry blood from heart to various organs return of the body	(i) They carry blood from various organs and it to the heart
(ii) The walls are thick.	(ii) The walls are thin.
(iii) Blood flows under high pressure	(iii) Blood flows under low pressure
(iv) They are dark reddish colour	(iv) They have bluish red colour
(v) Oxygen level are quiet high	(v) Oxygen level is low.

Q2. What are Stomata? Mention its function.

Ans: Stomata are minute openings on the lower sides of green leaves through which gases exchange take place during photosynthesis.

Its functions are: (i) It helps in the exchange of gas during photosynthesis.
(ii) It helps in transpiration.

Q3. Write the three events which occur during photosynthesis.

Ans: (i) Chlorophyll of the plant traps the light energy.
(ii) Conversion of light energy to chemical energy and splitting of water molecule into hydrogen and evolution of oxygen.
(iii) Reduction of carbon dioxide to carbohydrates.

Q4. What are the types of heterotrophic nutrition?

Ans: The types of heterotrophic nutrition are:

(i) Holozoic Nutrition: Organism takes the complex organic materials into its body by the process of ingestion, the ingested food is digested and then absorbed into the body cells of the organism.
Eg: Protists like Amoeba and higher animals.

(ii) Saprozoic Nutrition : Organism feeds on dead or on decaying animal matter. Eg: Saprozoites like round worms and flatworms

(iii) Saprophytic Nutrition: Organism breaks down the food materials outside the body and then absorb it. E.g. Fungi and Bacteria

(iv) Parasitic Nutrition: Organism obtains their food from the body of other living organism called the host. E.g: Cuscuta and Leech

Q5. What is the function of Gastric juice?

Ans: The gastric juice are secreted by gastric gland of stomach and they contain

(i) HCI : It creates an acidic medium which facilitated the action of enzyme pepsin. It also kills some of the micro organisms entering the stomach along with the food materials.

(ii)Pepsin: It causes partial digestion of protein.

(iii) Mucus: It protects the inner lining of the stomach from the action of the HCl.

Q6. Why does undigested protein from the stomach are digested inside the small intestine?

Ans: (i) The small intestine received pancreatic juice from the pancreas . Pancreatic juice contain an enzyme known as trypsin which is a protein digesting enzymes.

(ii) The walls of small intestine also contains gland which secrete protein digesting enzyme and

converted the protein into amino acids.

Q7. Write the function of Bile juice in digestion of food.

Ans: (i) It brings about the emulsification of fats.

(ii) It converts the acidic food which enter the small intestine into alkaline for enzyme to act on it.

Q8. Distinguish between aerobic and anaerobic respiration.

Ans:	***Aerobic***	***Anaerobic***
	(i) It takes place in the presence of oxygen	(i) It takes place in the absence of oxygen.
	(ii) Energy production is high	(ii) Energy production is low
	(iii) Glucose is completely broken down producing carbon-dioxide and water as end products products	(iii) Glucose is incompletely broken down producing ethanol or lactic acid as end

Q9.What advantages does a terrestrial animal get with regard to obtain 0_2 for respiration over an aquatic animals?

Ans: Terrestrial animal inhale oxygen directly from the atmosphere for breathing whereas aquatic animals obtain the dissolved oxygen in water and the amount of dissolved oxygen in water is quite low.

Q10. How is water transported in plants?

Ans: The water conducting system of higher plant includes xylem tissues like vessels and tracheids of the roots, stems and leaves are interconnected to form a continuous system reaching all parts of the plant. The capacity of root to take up ions from the soil creates a difference in the concentration of these ions

between the root and the soil. So, water moves from the soil into the root to stabilize this difference. Such a steady movement creates a pressure that can push the water upward. Then transpiration pull acts a major driving force in the movement of water in the xylem.

Q11. What are the difference between the transport of materials in xylem and phloem.

Ans:	***Transport of materials in xylem***	***Transport of materials in phloem***
	(i) It transport water and minerals	(i) It transport photosynthetic product
	(ii) It helps in upward movement	(ii) It helps in downward and lateral movement
	(iii) The flow of materials takes place from from root to leaves	(iii) The flow of materials takes place leaves to other parts of the plants.

Q12. What are the advantages of separation of oxygenated and deoxygenated blood in birds and mammals?

Ans: It is necessary in mammals and birds to separate oxygenated and deoxygenated blood because:

(i) It makes their circulatory system more efficient.

(ii) It helps in maintaining constant system body temperature

Q13. How is food transported in plants?

Ans: Phloem transport food materials from leaves to different parts of the plant. The transpiration of food in phloem is achieved by utilizing energy from ATP which helps in creating osmotic pressure that transport food from the area of high concentration to low concentration.

Q14.When do stomata remain open or close?

"or"

Explain the closing and opening of stomata.

Ans: The opening and closing of the stomata is brought about by the change in shape of the guard cells. The stomatal pore remains open when the guard cells swell due to the absorption of water and close when the guard cells shrink.

Q15. How is oxygen and carbondioxide transported in human beings?

Ans: In human beings, haemoglobin is the respiratory pigment. It has high affinity for oxygen. This pigment is present in the red blood corpuscles (RBC). Carbon dioxide is more soluble in water than oxygen. So, it is mostly transported in the dissolved form in our blood.

Q16. Explain double circulation in human beings.

Ans: The heart receives deoxygenated blood from different parts of the body and it pumps the blood to the lungs. The oxygenated blood from the lungs returns to the heart, which is pumped again into different parts of the body by the heart. Thus, the blood passes twice through the heart making one complete round to the body. This is called double circulation.

Q17. What would be the consequence of deficiency of haemoglobin in our body?

Ans: The consequence of deficiency of haemoglobin in our body are:

(i) Deficiency of haemoglobin in blood can affect the oxygen supplying capacity of blood which leads to deficiency of O_2.

(ii) It can also lead to a disease known as anaemia.

Q18. What are the methods used by plants to get rid of excretory products?

Ans: (i) Roots exudates waste materials into the soil.

(ii) The excess minerals are deposited the leaves that fall off.

(iii) Waste products are stored as resins and gums specially in all xylem.

Q19. Write the function of (i) Kidney (ii) Ureter (iii) Urinary Bladder.

Ans: (i) Kidney: (a) Excretion of unwanted nitrogenous waste (b) Urine formation

(ii) Ureter : It helps in transportation of urine from kidney to urinary bladder

(iii) Urinary bladder: It helps in collecting and storing of urine.

Q20. : The human lungs are digested to have maximum surface area for exchange of gases" Explain.

Ans: Lungs contains millions of alveoli which provide a surface for the exchange of gases. An extensive network of blood vessels is present in the wall of the alveoli. By lifting our ribs and flatten the diaphragm, the chest cavity become spacious. Air is sucked into the lungs and alveoli. The O_2 diffused into the blood and CO_2 from the blood diffused out into the air.

Q21. Why animals (human beings) are considered as a heterotrophic organism?

Ans: Because They cannot synthesized their own food by the process of photosynthesis and depend on other autotrophs directly or indirectly for their food.

Q22. What is peristalsis?

Ans: The Rhythmic alternate contraction and relaxation of the involuntary muscles of the wall of the Alimentary tract is called Persitalsis

Q23. What are platelets?

Ans: Platelets are tiny blood cells that help your body form clots to stop bleeding. If one of your blood vessels gets damaged, it sends out signals to the platelets. The platelets then rush to the site of damage. they form a plug (clot) to fix the damage.

Chapter - 14 Control and Co-ordination in living beings

Q1. Write five functions of five plant hormones.

Ans: (i) Auxin - Auxin promotes stem elongation, inhibit growth of lateral buds.

(ii) Gibberellins - Gibberellins helps in the growth of stem by inducing elongation of internodes.

(iii) Cytokinins - Cytokinins stimulates cell division and also cause the enlargement of cells and promote seed germination.

(iv) Abscisic acid(ABA) - Abscisic acid is a powerful growth inhibitor and can induce bud dormancy in varieties of plants.

(v) Ethylene - Ethylene hastens post harvest maturation of fruits.

Q2. Write five animal hormones. Write its one function each.

Ans: (i) Pituitary hormone: It promotes growth in animals including human beings.

(ii) Insulin: It maintains normal blood sugar level in the body.

(iii) Thyroxin : It regulates carbohydrates, protein and fat balance for growth.

(iv) Adrenaline: It facilitates the response to sudden demands imposed by stress such as pain, cold, low blood sugar, low blood pressure, anger, passion etc.

(v) Oestrogen : It promotes development of female primary and secondary sexual characteristics.

Q3. What will happen if the secretion of pituitary hormone is (i) optimum (ii) less (iii) excessive during childhood?

Ans: If the secretion of pituitary hormone is optimum during childhood, there will be normal growth of the individual. If there is less during childhood, it will lead to dwarfism. If there is excessive during growth period, it will result to extremely tall individual (gigantism)

Q4. What will happen if there is insufficient secretion of insulin by the pancreas?

Ans: If there is insufficient secretion of insulin, the sugar level in the blood becomes very high and we suffer from diabetes.

Q5. What are the three major part of the human brain? Explain.

Ans: (i) Forebrain : The main thinking part of the brain is the forebrain. It has regions which receive sensory impulses from various receptors. The fore brain has separate areas specialized fro smell, hearing, sight and so on.

(ii) Mid brain: Mid brain is comparatively a small region. It controls the reflex movement. The change in eye pupil size and shape of the eye lens are controlled in this region of the brain.

(iii) Hind brain: It consists of three centres i.e pons, cerebellum and medulla. The pons takes part in regulating respiration. The cerebellum maintains the posture and balance of the body. Medulla controls various involuntary actions.

Q6. How does adrenaline facilitate the animal body to face with hard situation? Give three points.

Ans: (i) Adrenaline is a hormone secreted by the adrenal gland and the action of this hormone is widespread throughout the body.

(ii) The target organs on which it acts include the heart. As a result the heart beats faster resulting in supply of more oxygen to the muscles.

(iii) The blood supply to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs and diverted to skeletal muscles. The breathing rate also increases.

Q7. Write one example of chemotropism?

Ans: One example of chemotropism is the growth of pollen tube through stigma and style towards ovule with the stimulus of chemical substances present in the carpel.

Q8. Define the following: (i) Reflex arc (ii) Synapse (iii) Reflex action

Ans: (i) Reflex arc : The nerve pathway involved in the reflex action including at its simplest a sensory nerve and a motor nerve with a synapse between.

(ii) Synapse: Synapse is a minute gap between terminal portion of axon of one neuron and Dendron of other neuron across which nerve impulses are transmitted.

(iii) Reflex action: It is an immediate spontaneous involuntary response to a stimulus.

Q9. Distinguish between Involuntary actions and reflex actions.

Ans:

Involuntary actions	**Reflex actions**
(i) All involuntary actions are not reflexes	(i) All reflex actions are involuntary in nature.
(ii) Involuntary actions generally involve brain.	(ii) Reflex actions are usually at the level of spinal cord.
(iii) Involuntary actions may not be quick.	(iii) Reflex actions are very quick.

Q10. What is the role of brain in reflex action?

Ans. Spinal cord is made up of nerves which supply information to think about. Thinking involves more complex mechanisms and neural connections. These are concentrated in the brain, which reacts to the stimuli and is the main coordinating center of the body. The brain and spinal cord constitute the central nervous system. They receive information from all parts of the body and integrate it. Hence, brain plays an important role in reflex action.

Q11. How does chemical coordination take place in animals?

Ans. In animals, chemical coordination is maintained by hormones secreted by endocrine glands, which function as chemical messengers. They are released by endocrine glands directly into the blood without any involvement of special ducts from where they reach the target tissue or organ to act. These organs and tissues then respond and enables the body to deal with different situations.

Q12. What are hormones? Where are they secreted from?

Ans:Hormones are chemical messengers that are secreted directly into the blood, which carries them to organs and tissues of the body to exert their functions. There are many types of hormones that act on different aspects of bodily functions and processes.

Hormones are secreted from the endocrine glands in the body. The glands are ductless, so hormones are secreted directly into the blood stream rather than by way of ducts. Some of the major endocrine glands in the body include: Pituitary gland, Pineal gland Thymus ,Thyroid, Adrenal glands Pancreas, Testes ,Ovaries

Chapter - 15 Reproduction

Q1. Distinguish between hypogeal and epigeal germination.

Ans:	**Hypogeal germination**	**Epigeal germination**
(i)	The entire seed and cotyledons remains inside the soil ,only plumule of the embryo emerges.	The cotyledons emerge out from the soil along with the growing seeding.
(ii)	There is elongation of epicotyl	There is elongation of hypocotyl

Q2. What are the advantages of sexual reproduction over asexual reproduction?

Ans: (i) In sexual reproduction, more variations are produced. Thus, it ensures survival of species in a population.

(ii) The newly formed individual has characteristics of both the parents.

(iii) Variations are more visible in sexual mode than asexual one. This is because in asexual reproduction , DNA has to function inside the inherited cellular apparatus.

Q3. Distinguish between budding and fragmentation.

Ans:	**Budding**	**Fragmentation**
(i)	Budding is a form of asexual reproduction in which a living organism grows on another one with an outgrowth known as bud.	Fragmentation is a splitting of organismn into fragments.
(ii)	It occurs in multicellular organisms like hydra.	It occurs in multicellular filaments algae like spirogyra.

Q4.What is a flower? Explain the complete structure with a neat labeled diagram.

Ans: A flower can be defined as a reproductive structure of a flowering plant.

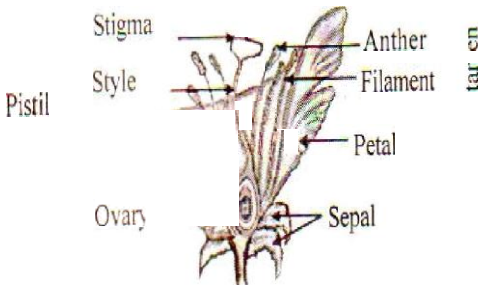
The parts of flower are:

(i) Calyx: It is the outermost whorl of the flower. It is usually made up of sepals which are commonly green and have leaf-like structure.

(ii) **Corolla:** It is the most colorful and bright part of the flower which attracts humans and pollinators.

(iii) **Androecium:** The next important whorl is androecium that includes stamens. Stamen is the male reproductive part of a flower that is made up of anther and filament.

(iv) **Gynoecium:** It is the innermost whorl, that includes the female reproductive part of the flower, mainly carpel. Carpel can be divided into three sections:



Stigma: It is a sticky portion where pollen grains fall, attach to the surface and germinate.

Ovary: The bottom part of the carpel is an ovary. It contains ovules in it. It also contains seeds which turn into fruit after the fertilization process.

Stvle. The connecting part of the stigma and the ovary is style. It is the female part of the flower, and it has a long tube-like structure.

Q5. Distinguish between Asexual and Sexual Reproduction.

Ans:

Asexual Reproduction	**Sexual Reproduction**
(i) It occurs in lower invertebrates and lower chordates and plant with simple organization.	(i) It occurs in almost all types of animals and mostly in higher plants
(ii) It is always uni-parental	(ii) It is usually biparental
(iii) Gametes are not formed	(iii) Gametes are always formed.
(iv) No fertilization takes place	(iv) fertilization takes place.
(v) Daughter organisms are genetically identical to the parents.	(v) Daughter organisms are genetically differ from the parents.

Q6. Distinguish between self pollination and cross pollination.

Ans:

Self pollination	**Cross pollination**
(i) It is the transfer of pollen grains from anther to stigma within the same flower	(i) It is the transfer of pollen grains from anther of one flower to stigma of another flower of another plant.
(ii) It occurs either in the same flower or another flower of the same plant	(ii) It occurs between two flowers which are from different plants but are of the same.
(iii) It occurs in the flowers which are genetically same	(iii) It occurs between flowers which are genetically different.

Q7.What is seed? How are seeds formed? Explain the structure of a seed?

Ans: A seed is a part of plant which contains a young plantlet in a dormant and resting condition.

Seeds are formed within the cones of gymnosperms and inside the fruits of angiosperms as a result of fertilization.

A seed is surrounded by a thick seed coat or testa providing protection against dehydration. A helium is the scar of the seed stalk. The embryo inside the seed consists of a plumule (future shoot), radical (future root) and seed leaves or cotyledons.

Q8. What is vegetative reproduction? Write two advantages of vegetative reproduction.

Ans: Vegetative reproduction is a method of asexual reproduction in which vegetative parts (root, stem, leaf and buds) can be detached from the parent plant body and developed into another complete daughter plant.

The two advantages of vegetative reproduction are

(i) Offsprings produced are genetically identical to the parent plant.

(ii) It is predominant method of reproduction in seedless plant.

Q9.What is spores? How does an organism be benefitted if it reproduces through spores?

Ans: Spores are small bodies containing a nucleus and a small amount of cytoplasm.

An organism is benefitted if it reproduces through spores by:

(i) It provides a means of survival during unfavourable conditions.

(ii) It helps in disperse the species to new locations.

Q10. What is regeneration? Why is regeneration not a normal process of reproduction?

Ans: It is a process by which some organisms replace or restore lost or amputated body parts.

Regeneration is not a normal process of reproduction because it can be used to reproduce only those organism which have relatively simple body organization consisting of only a few specialized cells or tissues but not in complex multicellular organism.

Q11. How does seed germination take place?

Ans: Seed growth or germination commences by water entering the seed through the micropyle and the testa absorb water. The testa splits and radical emerges.

Q12. Distinguish between Unisexual and Bisexual Flowers.

Ans:	**Unisexual flowers**	**Bisexual flowers**
	(i) Flower which has either male or female sex organ is called unisexual flower.	(i) Flower with both male and female sex organs is called bisexual flower.
	(ii) It is also called as incomplete flower eg. papaya, watermelon etc.	(ii) It is also called as complete flower e.g mustard, pea etc.

Q13.What is tissue culture? Write its advantages.

Ans: The production of new plants from a small piece of plant tissue or cells removed from the growing tips of a plant in a suitable growth medium is called tissue culture

Its advantages are:

(i) Tissue culture helps us to produce more copies of same plant with desired characters like big fruits, more fruits, colourful flowers, disease resistance etc.

(ii) Tissue culture helps us to produce plants which do not depend on seasonal changes of that area for particular yield. As seedlings are made available, planting is possible all through the year.

Q14.Distinguish between binary fission and multiple fission.

Ans:	**Binary fission**	**Multiple fission**
	(i) Nucleus divides into two parts	(i) Nucleus divides into many parts
	(ii) it occurs during normal conditions	(ii) It takes place during unfavourable conditions.
	(iii) Cytoplasm divides after each nuclear. nuclear division.	(iii) Cytoplasm does not divide after every division

Q15.Distinguish between pollination and fertilization.

Ans:

Pollination	Fertilization
(i) It is the transfer of pollen grains from the anther to the stigma of a flower.	(i) It is the fusion of male gamete with female gamete (egg).
(ii) It is achieved by agents like wind, water or animals.	(ii) It is achieved by the growth of pollen tube so that the male gamete reaches the female-germ" cells.
(iii) It is an external process.	(iii) It is an internal process.

Q16. Distinguish between monocotyledonous and dicotyledonous plants.

Ans:

Monocotyledonous plants	dicotyledonous plants.
(i) Seeds have a single cotyledon	(i) Seeds have two cotyledons
(ii) Adventitious root system present	(ii) tap root system present
(iii) Leaves have parallel venation	(iii) Leaves have net venation or reticulate venation.

Q17. What is parthenogenesis?

Ans: Parthenogenesis is a type of asexual reproduction in which the organism is developed from unfertilized egg.

Q18.What is Cloning?

Ans: Cloning is a term used to describe the formation of a group of organisms of the same species by asexual methods involving mitosis and vegetative or artificial propagation.

Q19. What are the advantages of seed formation in plants?

Ans: (i) It can be dispersed to long distances.

(ii) It can be stored for future plant and can be use for a long time.

(iii) Seeds can survive without water, so if there is a drought the plant can survive.

Q20. What is Reproduction? Why is it necessary?

Ans: Reproduction is the biological process by which new "offspring" individual organisms are produced from their "parents". Reproduction is a fundamental feature of all known life; each individual organism exists as the result of reproduction. The known methods of reproduction are broadly grouped into two main types: sexual and asexual.

It is necessary because

→reproduction is essential for the continuing existence of a species

→to maintain the food chain

→to maintain balance in nature

→it helps in multiplication of a particular species

Q21. What is Budding? Explain the budding process in hydra.

Ans: Budding is a type of asexual reproduction in which a new organism develops from an outgrowth or bud due to cell division at one particular site.

Budding in hydra involves a small bud which is developed from its parent hydra through the repeated mitotic division of its cells. The small bud then receives its nutrition from the parent hydra and grows healthy. Growth starts by developing small tentacles and the mouth. Finally, the small newly produced hydra gets separate from its parent hydra and becomes an independent organism.

Chapter - 16 Heredity and Evolution

Q1. Why did Mendel select the common pea for his experiment?

Ans: (i) In garden pea, he found a number of contrasting visible characters namely round and wrinkled seeds, tall and dwarf plants, yellow and green seeds and so on.

(ii) The cross pollination and fertilization can be easily achieved.

(iii) The pea plant was easy to cultivate and from one generation to next took only a single growing season.

Q2. State Mendel's law of segregation.

Ans: ***First law: Law of segregation***

Allelic genes in a hybrid do not blend or contaminate each other but segregate and pass into different gametes. This law is derived from a monohybrid cross.

Q3.Write the Phenotypic and genotypic ratios of F_2 generation in monohybrid cross.

Ans: The phenotypic ration of F_2 generation in monohybrid cross is 3:1

and the genotypic ratio of F_2 generation in monohybrid cross is 1 : 2: 1

Q4.Distinguish between back cross and test cross.

Ans: Back cross is a cross between F_t offspring and one its parents whereas test cross is a cross made between F offspring and its recessive parent.

Q5. What are dominant and recessive character?

Ans: The character which appears in F_t generation is called dominant character and the other parental character which is not appear in the Ft generation is called recessive character.

Q6. What is Evolution? What will happen if the tails of mice are surgically removed in each generation while breeding?

Ans: Evolution is a process of gradual change from one form of life to another through a series of intermediate forms.

Nothing will happen because changes in the non-reproductive tissues cannot be passed on to the DNA of the germ cells. So, the removal of the tails cannot change the genes of the germ cells of the mice.

Q7. What are fossils? How does the study of fossils provide an evidence in favour of organic evolution?

Ans: Fossils are the materials remains or traces of organisms preserved inside the earth's crust. Fossilization or formation of fossils involved the conversion of an organism or its parts into a hard structure or rock. When a body or some parts of it get caught in hot mud, they will not decompose quickly and the mud will eventually harden and retain the impression of the body or body parts.

From the study of these fossils one can understand about the life forms of the past. It enables us to trace the origin and trend of evolution of several groups of plant and animals.

Q8. Explain the theory of organic evolution proposed by Charles Darwin.

"or"

Explain the important features of Charles Darwin natural selection.

Ans: (i) *Over production of offspring and a consequent struggle for existence* - Organisms reproduce their own species in a geometrical proportion. They struggle for existence viz. limited resources, food etc.

(ii) *Variations and their inheritance* - The survivors in the struggle for existence have certain favourable variations.These variations are transmitted to the offspring. Others with unfavourable variations perish, resulting to the survival of the fittest.

(iii) *Natural selection:* Nature or the environment selects those individuals best fitted for survival.

(iv) *Formation of new species (speciation)* - Speciation is the evolution of a new species form the pre-existing one. A species consists of a population of organisms which are able to breed amongst themselves in the natural condition.

Q9. Explain the three evidences of organic evolution.

Ans: (i) *Evidence form morphology and comparative anatomy* - analyzing their homologous organs

and analogous organs.

(ii) *Evidence from embryology* - analyzing the development pattern of embryo in all groups of animal.

(iii) *Evidence from paleontology* - studying of fossils obtained will help to determine the evolutionary history.

Q10. How is the sex of a child determined in human beings?

Ans: In human beings, the sex of a new born child is determined depending upon which the kind of male gamete (sperm) fertilized the female gametes (egg). If the male gametes carry „X‟ chromosome fertilized the egg, the newly born child will be a girl. If the gametes carry „Y‟ chromosome fertilized the egg, the newly born child will be a boy.

Q11. Define Speciation. Will Geographical isolation be a major factor in the speciation of an organism that reproduces asexually. Give reason.

Ans:Origin of new species from the existing one due to reproductive isolation of a part of its population is called speciation.

No, geographical isolation will not be the major factor in the speciation of asexually reproducing organisms. This is because there is no exchange of genetic material with the other species in such organisms. They pass on the parent DNA to the offspring which leaves no chance of speciation.

Q12. Human races have yellow, black and white or brown in skin colour. But all of them belong to a single species. How scientist proved it?

Ans: Scientist proved it by using tools for tracing evolutionary relationship like excavating, time dating, studying fossils as well as determining DNA sequence.

Chapter - 17 Our Environment

Q1. What is the role of Decomposers in an ecosystem?

Ans: The decomposers play an important role in the ecosystem. They breakdown the organic waste products and dead remains of organisms into the inorganic substances needed by the producers(plants). They break down the complex organic substances into simple inorganic substances that replenish the fertility of the soil. They also serve as food for organism like earthworms.

Q2. Write the role of insects in our ecosystem.

Ans: (i) Insects are good prey for many other animals like spiders, toads and birds.

(ii) Insects are best pollinators and also help in the dispersal of spores.

(iii) Some insects have medicinal values for example Caterpillars.

Q3. What is an ecosystem? Write its component.

Ans: An ecosystem is the structural and functional unit of the biosphere comprising of abiotic and biotic components that interact by means of food chain and chemical cycle.

Its components are:

(i) ***Biotic components:*** It consists of micro-organisms, plants and animals including human beings.

(ii) ***Abiotic components:*** It comprises physical factors like temperature, rainfall, wind, soil and minerals.

Q4. What are food chain and food web?

Ans: A food chain is a pathway that represents the exchange of energy from one organism to another. In other words, it is the chronological order of who eats whom in a biological community.

A food web is the interlocking of different food chain by developing interconnection at various trophic levels so as to form a number of feeding interaction in a biotic community.

Q5. What is Ozone? How does it act as a protective shield?

"or"

Ozone is a deadly poisonous gas. Why should we protect this poisonous gas from depletion at a higher level of atmosphere. Give one possible reason.

Ans: Ozone is a deadly poisonous gas formed by three atoms of oxygen i.e O_3.

Ozone filters away the ultraviolet radiation from the sun and protects the earth from its harmful effects. Thus it acts as a protective shield.

Q6. What are the causes of ozone layer depletion? Write its effects in human beings.

Ans: Depletion of ozone shield is caused by a number of synthetic chemicals like chlorofluoro carbons (CFCs) which are used as refrigerant and in fire extinguishers.

Sunburn, ageing, wrinkling of skin, cataract of eye, destruction of protein, mutation of genes leading to skin cancer or melanoma etc.

Q7. What will happen if we kill all insects?

Ans: If we kill all the insects, the transfer of food energy to the next level will stop. Also, there will occur over population of organisms belonging to the previous trophic level. It will bring imbalance in the ecosystem.

Q8. Ozone is an unstable gas for its formation and destruction, UV rays are required. Write the reactions involved.

Ans: The reactions involved are:

$$O_2 \xrightarrow{UV} O + O$$

$$O + O_2 \xrightarrow{UV} O_3$$

Q9. Why is the waste dumped at unspecified places in unscientified manner in Manipur?

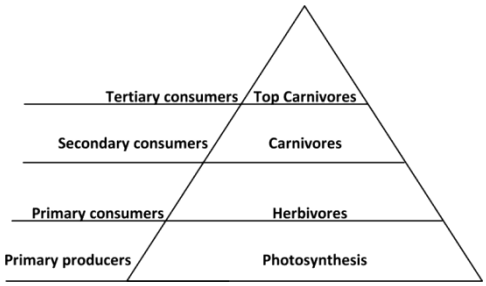
Ans: It is because:-

(i) Facilities for effective collection and disposal of waste are very much inadequate in all towns resulting to a large proportion of these remaining uncollected.

(ii) There is no specific landfill site for disposal.

Q10. What are trophic levels? Draw a diagram to show various trophic levels up to fourth stage.

Ans: The various steps through which the food energy passes are called trophic levels.



Q11.Write any three characteristics of food chain.

Ans: a) there is repeated eating in which each group eats the smaller one and is eaten by the larger one. Thus it involves a nutritive interaction between the biotic components of an ecosystem.

b)the plants and animals which depends successively on one another forms the limbs of the food chain.

c)usually there are four or five trophic levels. shorter food chains provide greater availability of energy and vice-versa.

Q12. Why are green plants called as producers?

Ans: Green Plants are called producers. This is because they produce their own food! They do this by using light energy from the Sun, carbon dioxide from the air and water from the soil to produce food - in the form of glucose/sugar.

Q13. Distinguish between food chain and food web.

Food Chain	Food Web
(i)A linear pathway showing the flow of energy	(i)A multitude of networks showing the flow of energy
(ii)An organism of higher level trophic feeds on a specific organism of lower trophic level	(ii)An organism of higher trophic level has access to more members of a lower trophic level.
(iii)Has no effect on the adaptability and competitiveness of organisms.	(iii)Has a role in improving the adaptability and competitiveness of an organism.

Chapter - 18 Natural Resources

Q1. Write five Ecological services provided by forest.

Ans: (i) Production of oxygen: All the green plants of the forest produce oxygen through photosynthesis which is essential for respiration of all the living organisms.

(ii) Reducing global warming: The forests act as an absorbent for CO_2 thereby reducing the problems of global warming caused by CO_2.

(iii) Habitat for wildlife: Forests are the homes of millions of wild animals and Plants.

(iv) Soil Conservation: The trees of the forest bind the soil particles tightly in their roots thus preventing soil erosion.

(v) Pollution moderator : Forests also act as pollution moderators by absorbing many toxic gases and thus help in keeping the air pure.

Q2. Write three consequences of deforestation.

Ans: (i) Rainfall is affected due to changes in hydrological cycle.

(ii) Problems of soil erosion and loss of soil fertility increase.

(iii) In hilly areas deforestation leads to landslides.

Q3. Distinguish between agro forestry & Social forestry.

Ans: Agro forestry is a system in which trees or shrubs are grown around or among crops or pastures to create diverse, productive and a profitable land use.

Whereas Social forestry means management and protection of forests and afforestation on barren lands with purpose of helping environment, social and rural development.

Q4. How can wildlife conservation be done?

Ans: Wildlife conservation can be done by

(i) Protection of natural habitats through controlled, limited exploitation of species.
(ii) establishing Biosphere Reserves for plant and animal species.
(iii) improving the existing protected areas as sanctuaries, national parks etc.
(iv) imposing restrictions on export of rare plant and animal species and their products.
(v) imposing protection through legislation.

Q5. What is wildlife? Why should we conserve wild life?

Ans: All kinds of non-cultivated plants and non-domesticated animals living freely in their natural habitats far from human interference, control and dominance are known as wildlife.

We should conserve wildlife because

(i) It maintains ecological balance for supporting life.
(ii) It provides a number of useful materials like meat, honey, wax, silk, lac, fur, timber, medicine etc.
(iii) Animals such as frogs, rabbits, dogs, guineapigs, monkeys etc are used in teaching students and also by scientists to experiment in surgery and medicine.
(iv) They attract tourists thereby increasing the income.
(v) Many animals by their beauty and pattern appeal to the aesthetic sense of men and often become a subject of inspiration for painting, poetry, sculpture and writing.

Q6. What steps should be taken up for the conservation of wildlife and petroleum?

Ans: The following practices can be followed for the conservation of coal and petroleum.

(i) To turn off light, fans and other electric appliances when not in use.
(ii) Top use solar cooker for cooking our food on sunny days which will cut down the expenses of LPG.
(iii) To wear adequate woolen warn clothes in winter days inside the house instead of using the heat convector.
(iv) To ride bicycle or just to walk down small distances instead of using car and scoter.
(v) To use as far as possible renewable energy sources like solar energy, wind energy, hydropower sources etc.

Chapter - 19 The Regional Environment

Q1. "The construction of big dams take a big role in the development of Nation". Give reason by giving five points.

"or"

How are the river valley projects considered to play a key role in the development process?

"or"

Write the advantages of constructing big dams. Write five points

Ans: (i) The projects provided employment thereby raising the standard and quality of life.
(ii) They have tremendous potential for economic upliftment and growth.
(iii) They can generate electricity and reduce power shortage.

(iv) They provide irrigation water to cultivate land in lower areas.
(v) They supply drinking water in remote areas.

Q2. Why is there shortage of drinking water in Cherrapunji even though the annual rainfall is 1100cm?

Ans: It is due to lack of proper harvesting and proper management of the rain water.

Q3. What is Rainwater harvesting? How can it be done?

Ans: Rainwater harvesting is the accumulation or storage of rain water for reuse on-side rather than allow to run off.

Rain water harvesting can be done by any one of the following method
(i) By storing in special storage tanks or reservoirs constructed above or below ground.
(ii) By constructing pits, dug-wells, lagoons or check dams on small streams.
(iii) By recharging the ground water.

Q4. Write three objectives of rain water harvesting.

Ans: (i)To meet the increasing demands of water.
(ii) To avoid flooding of roads.
(iii) To recharge the ground water for raising the water table.

DIAGRAM

(i) Human Heart
(ii) Nephrons
(iii) Longitudinal section of a flower
(iv) Reflex arc.
(v) Cross Section of a leaf