BrightWay Tuition Academy Rana Town Dahranwala

Sir Zubair 03027076176

Notes Bio 10th

Unit 10: **1-**Define cellular respiration. Ans: Cellular respiration is the process in which the C-H bonds in food are broken by oxidation reduction reactions and the energy is transformed into ATP. **2-** What is gaseous exchange? Ans: Taking in oxygen from environment and giving out of carbon dioxide from body is termed as gaseous exchange. **3-** Define breathing. Ans: The term breathing is used for the process through which animals take air in their bodies to get oxygen from it and then give out the air for getting rid of carbon dioxide. **4-** What are lenticels? Write their function. Ans: In woody stems and mature roots, the entire surface is covered by bark. There are certain pores in the layer of bark. These are called the lenticels. Function: The lenticels allow air to pass through them. **5-** What is emphysema? Write its symptoms. Ans: Emphysema is the destruction of the walls of the alveoli. It results in larger sacs but with less surface area for gaseous exchange. As lung tissue breaks down, the lungs do not come back to their original shape after exhalation. So air cannot be pushed out and is trapped in the lungs. Symptoms: Shortness of breath, fatigue, recurrent respiratory infections and weight loss. **6-** Differentiate b/w glottis & epiglottis. Ans: Glottis: Glottis is a narrow opening at the floor of pharynx which leads into larynx. Epiglottis: The glottis is guarded by a flap of tissue called the epiglottis. **7-** What is role of mucous in nasal cavity? OR Write function of hairs and mucous in nasal cavity. OR Write two functions of nasal cavity. Ans: There are fine haris and mucous in nasal cavity which filter the dust particles from the air. The mucous also moistens and warms the incoming air and keeps its temperature nearly equal to the body. **8-** Why is larynx known as voice box? Ans: Two pairs of fibrous bands called vocal cords are stretched across the larynx. The vocal cards vibrate when the air passes through them. This vibration produces sounds. That's why larynx is known as voice box. **9-** What are vocal cards? Write their function. Ans: Two pairs of fibrous bands called vocal cords are stretched across the larynx. The vocal cards vibrate when the air passes through them. This vibration produces sounds. **10-** Name two phases of breathing. Also write their definitions. Ans: There are two phases of breathing: i- Inhalation ii-Exhalation. Inhalation (inspiration): The phase of breathing in which air is drawn into the lungs. Exhalation (Expiration): The process of breathing in which air is expelled from the lungs. **11-** What is trachea? Write role of C-shaped cartilaginous rings in trachea. Ans: Larynx continues to the trachea, which is also called the windpipe. It lies in the front of the oesophagus. There are C-shaped cartilaginous rings in the wall of trachea. The cartilages keep the trachea from collapsing even when there is no air in it. **12-** Differentiate b/w pleural membrane & pleural fluid. Ans: Pleural membrane: Each lung is enclosed by two membranes called the outer pleural membrane and the inner pleural membrane. Pleural fluid: The membranes enclose a fluid which provides lubrication for the free expanding and contracting of the lungs. **13-** Write causes and symptoms of bronchitis. Ans: Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes. It is caused by viruses, bacteria or exposure to chemical irritants e.g. tobacco smoke. Symptoms: cough, mild wheezing, fever, chills and shortness of breath. **14-** Differentiate b/w acute bronchitis & chronic bronchitis. Ans: Acute bronchitis: The acute bronchitis usually lasts about two weeks and patients recover with no permanent damage to the bronchi or bronchioles. Chronic bronchitis: In chronic bronchitis, the bronchi develop chronic inflammation. It usually lasts for three months to two years. **15-** What is lung cancer? Write its causes/reasons. Ans: Lung cancer is a disease of uncontrolled cell divisions in the tissues of the lung. The cells continue to divide without any control and form tumours. Reasons: Smoking and smoke of industries is main cause of lung cancer. **16-** Write a note on asthma. Ans: Asthma is a form of allergy, in which there is inflammation of the bronchi, more mucous production and narrowing of the airways. Symptoms: shortness of breath, wheezing, cough and chest tightness. **17-** Explain nicotine. Ans: Nicotine is a powerful poison and was widely used as an insecticide in past. When inhaled, through tobacco smoking, it reaches our circulatory system and hardens the walls of the arteries and

damages the brain tissues. **18-** Define passive smoking, how is it harmful? Ans: Passive smoking is the inhalation of smoke from another's smoking. It is also a cause of lung cancer. **19-** Explain arteriosclerosis. Ans: Chemicals in smoke increase the production of blood platelets. When platelets are more than the normal numbers, they make the blood viscous and it can lead to arteriosclerosis. **20-** Define double pneumonia, and name the bacterium that is the main cause of pneumonia. OR Explain pneumonia. Ans: Pneumonia is an infection of lungs. If this infection affects both lungs then it is called double pneumonia. The most common cause of pneumonia is a bacterium, Streptococcus pneumoniae.

Unit 11: 21- Define homeostasis and give example. Ans: Homostasis may be defined as the maintenance of the internal conditions of body at equilibrium, despite changes in the external environment. For example, the core temperature of human body remains at about 37°C despite fluctuations in the surrounding at temperature. **22-** Differentiate b/w osmoregulation & thermoregulation. Ans: Osmoregulation: It is maintenance of the amounts of water and salts in body fluids (i.e. blood and tissue fluids). Thermoregulation: The maintenance of internal body temperature is called thermoregulation. **23-** What is guttation? How is it different from dew? Ans: The appearance of drops of water on the tips or edges of leaves is called guttation. In guttation, water comes from plants' body, while in dew the water condense from the atmosphere onto the plant surface. **24-** Define thermoregulation and excretion. Ans: Thermoregulation: The maintenance of internal body temperature is called thermoregulation. Excretion: In this process, the metabolic wastes are eliminated from body to maintain the internal conditions at equilibrium. **25-** Differentiate b/w transpiration & guttation. Ans: Transpiration: Transpiration is the loss of water from plant surface in the form of vapours. Guttation: The appearance of drops of water on the tips or edges of leaves is called guttation. **26-** Define hydrophytes and give example. Ans: Hydrophytes are the plants which live completely or partially submerged in freshwater. Such plants do not face the problem of water shortage. Hydrophytes have broad leaves with a large number of stomata on their upper surfaces. This characteristics helps them to remove the extra amount of water. Example: water lily. **27-** Define xerophytes and give example. OR write two adaptations in xerophytes to reduce water loss. Ans: Xerophytes live in dry environments. They possess thick, waxy cuticle over their epidermis to reduce water loss from internal tissues. They have less number of stomata to reduce the rate of transpiration. Such plants have deep roots to absorb maximum water from soil. Cacti (singular Cactus) are the common example of such plants. **28-** Define halophytes and give example. Ans: Halophytes live in sea waters and are adapted to salty environments. Salts enter in the bodies of such plants due to their higher concentration in sea water. Many sea grasses are included in this group of plants. **29-** Why transpiration not occur at night? Ans: At night, transpiration usually does not occur because most plants have their stomata closed. **30-** What is skin? Write its function. Ans: The outer most layer of human body is known as skin. It consists of two layers. Epidermis is the outer protective layer without blood vessels while dermis is the inner layer. Function: Skin performs important role in the regulation of body temperature. **31-** Differentiate b/w renal cortex & renal medulla. Ans: Renal cortex: Renal cortex is the outer part of kidney and it is dark red in colour. Rena medulla: Renal medulla is the inner part of kidney and is pale red in colour. Renal medulla consists of several cone shaped areas called renal pyramids. **32-** Differentiate b/w renal corpuscle & renal tubule. Ans: Renal corpuscle: The renal corpuscle is not tubular and has two parts i.e. glomerulus and Bowman's capsule. Renal tubule: The renal tubule is the part of nephron which starts after Bowman's capsule. **33-** Define Osmosis. Ans: Osmosis is the movement of water through a semi-permeable membrane from a hypotonic solution (solution with low solute concentration) to hypertonic solution (solution with high solute concentration). **34-** Name parts of urinary/excretory system of humans. Ans: Urinary system of human is formed of one pair of kidneys, a pair of ureters, a urinary bladder and a urethra. **35-** What is lithotripsy? Ans: Lithotripsy is method for removal of kidney stones. In this method, non-electrical shock waves from outside are bombarded on the stones in the urinary system. Waves hit the dense stones and break them. Stone become sand-like and are passed through urine. **36-** Write a note on kidney transplant. Ans: Kidney transplant is treatment for the end-stage kidney failure. It is the replacement of patient's

damage kidney with a donor healthy kidney. **37-** What are the main causes of kidney stones? Ans: The major causes of kidney stones are age, diet (containing more green vegetables, salts, vitamins C & D), recurring urinary tract infections, less intake of water, and alcohol consumption. **38-** Write symptoms of kidney stones. Ans: The symptoms of kidney stones include severe pain in kidney or in lower abdomen, vomiting, frequent urination and foul-smelling urine with blood and pus. **39-** write symptoms of renal failure. Ans: i- The main symptom of kidney failure is the high level of urea and other wastes in blood, which can result in vomiting, nausea, weight loss, frequent urination and blood in urine. ii- Excess fluids in body may also cause swelling of legs, feet and face and shortness of breath.

Unit 12: 40- Differentiate b/w stimulus or stimuli and response. Ans: Stimulus: Factors that can bring about certain responses in living organisms are called stimuli (singular stimulus). A stimulus is any change in environment, which can provoke a response in organism. Examples: touch, light etc. Response: On receiving the message from coordinators, the effectors perform action. This action is called response. For example, pulling our hand away from something very hot. **41-** Define coordinators and give example. Ans: These are the organs that receive information from receptors and send messages to particular organs for proper action. For example, In nervous coordination, brain and spinal cord are coordinators. **42-** Define receptors and give example. Ans: The organs, tissues or cells which are specifically built to detect particular type of stimuli are called receptors. For example, ear, nose, tongue etc. **43-** Differentiate b/w dendrites & axons. Ans: Dendrites conduct impulses toward cell body and axons conduct impulses away from cell body. **44-** Define meninges and write its function. Ans: Inside cranium, brain is covered by three layers called meninges. Function: i- Meninges protect brain. ii- it also provide nutrients and oxygen to brain tissue through their capillaries. **45-** Differentiate b/w sensory neurons & motor neurons. Ans: Sensory neurons: Sensory neurons conduct sensory information from receptors towards the CNS. Sensory neurons have one dendrite and one axon. Motor neurons: Motor neurons carry information from interneurons to muscle or glands. They have many dendrites but only one axon. **46-** Write a note on midbrain. Ans: Midbrain lies between hindbrain and forebrain and connects the two. It receives sensory information and sends it to the appropriate part of forebrain. Midbrain also controls some auditory reflexes and posture. **47-** Write two functions of spinal cord. Ans: i- It serves as a link between body parts and brain. Spinal cord transmits nerve impulses from body parts to brain and from brain to body parts. ii- Spinal cord also acts as a coordinator, responsible for some simple reflexes. **48-** Define somatic nervous system. Ans: It is responsible for the conscious and voluntary actions. It includes all of the motor neurons that conduct impulses from CNS to skeletal muscles. **49-** Write two disorders of the eye. OR Differentiate b/w myopia (short sight) and hypermetropia (long sight). Ans: Myopia (short sight): The elongation of eyeball results in myopia. Such persons are not able to see distant objects clearly. This problem can be rectified by using concave lens. Hypermetropia (long sight): It happens when eyeball shortens. Such persons are not able to see near objects clearly. Convex lens is used to rectify this problem. **50-** What is colour blindness. Ans: Each type of cones recognizes one of the three primary colours i.e. blue, green and red. If any type of cones is not working well, it becomes difficult to recognize that colour. Such person is also not able to distinguish different colours. This disease is called colour blindness and it is a genetic problem. **51-** Define brain stem. Ans: The medulla oblongata, pons, and midbrain connect the rest of brain to spinal cord. They are collectively referred to as brain stem. **52-** Explain coordination and its types. Ans: A body works as one unit, in which its different organs and systems cooperate and work in harmony with each other, such activity is known as coordination. Types of Coordination: i- Nervous coordination brought about by nervous system ii- Chemical coordination brought about by endocrine system. **53-** Differentiate b/w sympathetic & parasympathetic nervous system. Ans: sympathetic nervous system: sympathetic nervous system prepares body to deal with emergency situations. During an emergency situation, this system takes necessary actions. For example: it dilates pupils, accelerates heartbeat, increases breathing rate and inhibits digestion. parasympathetic nervous system: When stress ends, the parasympathetic nervous system takes action and normalizes all the functions. It causes pupils to contract, promotes digestion, and slows the rate of

heartbeat and breathing rate. **54-** What is epilepsy? Ans: Epilepsy is a nervous disorder in which there is abnormal and excessive discharge of nerve impulses in brain. It causes unprovoked seizures in patient. 55- Owl is not able to see during day time. Why? Ans: Owl is not able to see during day time. The reason for this is the deficiency of cones which receive and sense the bright light.

Unit 13: **56-** Define movement and its types. OR Define movement & locomotion. Ans: Movement: Movement means the act of changing place or position by entire body or by its parts. there are two types of movements i.e. i- movements of body parts ii- locomotion. Locomotion: Locomotion is the movement of an animal as a whole from one place to another. **57-** Define bone and write its function. Ans: Bone is the hardest connective tissue in body. Bones not only move, support and protect the various parts of body but also produce red and white blood cells and store minerals. **58-** Define cartilage and name its types. Ans: Cartilage is a dense, clear blue-white firm connective tissue but less strong than bone. The cells of cartilage are called chondrocytes. Types: i- Hyaline cartilage ii-Elastic cartilage iii-Fibrous cartilage. **59-** Differentiate b/w endoskeleton & exoskeleton. Ans: Endoskeleton: The skeletal system in vertebrates is on the inside of body and is called endoskeleton. For example: human beings. Exoskeleton: The skeletal system of some invertebrates is on the outside of the body, and is called exoskeleton. For example: arthroponds. **60-** Differentiate b/w elastic cartilage & fibrous cartilage. Ans: Elastic cartilage: Elastic cartilage is quite strong but has elasticity due to a network of elastic fibres in addition to collagen fibres. It is found in epiglottis, pinna etc. Fibrous cartilage: Fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form. It is found in intervertebral discs. **61-** What is hyaline cartilage? Ans: Hyaline cartilage is strong yet flexible. It is found covering the ends of the long bones, in the nose, larynx, trachea and bronchial tubes. **62-** Write two functions of bone. Ans: Bones not only move, support and protect the various parts of body but also produce red and white blood cells and store minerals. **63-** Differentiate b/w origin & insertion of skeletal muscle. Ans: Origin: One end of a skeletal muscle is always attached with some immoveable bone. This end of muscle is called the origin. Insertion: other end of muscle is attached with a moveable bone and is called insertion. **64-** Differentiate b/w compact & spongy bone. Ans: Compact bone: The hard outer layer of a bone is called compact bone. Spongy bone: Interior of bone is soft and porous. It is called spongy bone. **65-** Differentiate b/w tendons & ligaments. Ans: Tendons: Tendons are tough bands and attach muscles to bones. When a muscle contracts tendon exerts a pulling force on the attached bone, which moves as a result. Ligaments: Ligaments are strong but flexible bands and join one bone to another at joints. They prevent dislocation of bones at joints. **66-** Define antagonists. Ans: Skeletal muscles are usually in pairs of antagonists. In an antagonistic pair, both muscles do opposite jobs. When one muscle contracts, the other relaxes and this phenomenon is known as antagonism. **67-** What is osteoporosis? Write its causes. Ans: Osteoporosis is a bone disease in adults, especially in old people. It is more common in old women. Reasons: i- Decrease in the density of bones due to loss of calcium and phosphorus. ii- it may be due to lack of proteins and vitamin C, lack of physical activities or deficiency of estrogen hormone. **68-** Differentiate b/w flexor & extensor. OR Differentiate b/w flexion & extension. Ans: Flexor: When a muscle contracts and bends the joint, it is known as flexor muscle and this movement is called flexion. Extensor: When a muscle contracts and straightens the joint, it is known as extensor muscle and this movement is called extension. **69-** Differentiate b/w biceps and triceps muscles. Ans: Biceps is a flexor muscle on the front of the upper arm bone while Triceps is an extensor muscle on the back of arm. **70-** Explain hinge joints with example. Ans: Hinge joints move back and forth like the hinge on a door and allow movements in one plane only. Examples: The knee and elbow are hinge joints. **71-** Define joint and name its types. Ans: A joint is the location at which two or more bones make contact. Types of joints; i-Immoveable (Fixed) joints ii- Slightly moveable joints iii- Moveable joints. **72-** Define ball-and-socket joint and give example. Ans: Ball-and-socket joints allow movement in all directions. The hip and shoulder joints are ball-and-socket joints.

Unit 14: **73-** What is reproduction? Write its types. Ans: Reproduction is defined as the production of next generation of same species. There are two types of reproduction: i- Asexual reproduction ii-Sexual

reproduction. **74-** Differentiate b/w asexual and sexual reproduction. Ans: Asexual reproduction: Asexual reproduction means simple cell division that produces an exact duplicate of an organism. Sexual reproduction: Sexual reproduction involves the joining (fusion) of male and female sex cells i.e. gametes. **75-** Explain the importance of reproduction. Ans: Reproduction is basic characteristic of organisms. It is essential for the continuation of species. It ensures that the genetic material of one generation is transmitted to the next. **76-** Define budding and give example. Ans: Budding is a type of asexual reproduction in which a bud develops as a small outgrowth on parent's body and forms the new individual. For example: Asexual reproduction in yeast, sponges, hydra and corals take place through budding. **77-** Define fragmentation and give example. Ans: It is a type of asexual reproduction in which the animal breaks up into many pieces and each piece develops into a mature animal. Example: A planarian reproduce by fragmentation. **78-** Define endospores. Ans: The spores formed inside the bacterial cell are called endospores. For example: In Bacillus, spores are formed inside bacterial cell. **79-** Differentiate b/w cutting & grafting. Ans: Cutting: In this method, cuttings may be taken mainly from the stems or roots of parent plant. These cuttings must have a meristematic region from which growth can occur. Grafting: In grafting, a piece of stem is cut from the plant and is attached with another plant with established root system. After a while, the vascular bundles of the attached stem piece and the host plant are connected to each other. The stem piece and the plant begin to grow together. **80-** write two advantages of vegetative propagation. Ans: i- It helps to increase number of plants at a rapid time. ii- Plants bearing seedless fruits can be grown only by vegetative propagation. **81-** write two disadvantages of vegetative propagation. Ans: i- The plants do no have genetic variations ii- Species specific diseases can attack and this can result in the destruction of an entire crop. **82-** Differentiate b/w self pollination & cross pollination. Ans: Self pollination: Self pollination is defined as the transfer of pollen grains from the anther to the stigma of the same flower or other flower of the same plant. Cross pollination: Cross pollination is the transfer of pollen grains from the flower on one plant to the stigma of flower on other plant of the same species. **83-** Define dormancy. Ans: Most seeds go through a period, during which there is no growth. This period is called the dormancy of the seed. **84-** Explain double fertilization. Ans: In this process, two sperms enter the female gametophyte. One sperm fuses with egg and forms a diploid zygote. The other sperm fuses with diploid fusion nucleus and form a triploid nucleus called endosperm nucleus. Since the process of fertilization involves two fusions, it is called double fertilization. **85-** Define suckers. OR How reproduction takes place in plants through suckers? Give example. Ans: Suckers are lateral stems close to ground level. A sucker grows underground from some distance and then turns up, producing the new plant. Mint and Chrysanthemum reproduce in this way. **86-** Define alternation of generation in plants. Ans: In the life cycle of plants, two different generations alternate with each other. The phenomenon in which two different generations alternate with each other during life cycle is known as alternation of generation. **87-** Differentiate b/w internal & external fertilization. Ans: Internal fertilization: In Internal fertilization, egg cells are fertilized within the reproductive tract of female. It occurs in reptiles, birds and mammals. External fertilization: In external fertilization, egg cells are fertilized outside of body. External fertilization occurs mostly in aquatic environment. For external fertilization, the animals have to release great number of gametes. **88-** For what STDs stands for? Ans: STDs stands for "Sexually Transmitted Diseases". STDs are defined as the diseases that are transmitted through sexual act. **89-** Define calluses. Ans: Tissues are taken from any part of plant and are put in a suitable nutrient medium. The tissue cells start mitosis and produce masses of cells called calluses. **90-** Define parthenogenesis. Ans: Parthenogenesis is considered as a form of asexual reproduction. In it, an unfertilized egg develops into new offspring. Some fishes, frogs and insects reproduce by means of parthenogenesis.

Unit 15: 91- What is traits? Name two human traits. Ans: The characteristics which are controlled and transmitted to next generations through genes are called traits. For example: in man height, colour of the eyes, intelligence etc. are all inheritable traits. **92-** Define homologous chromosomes, and write number of chromosomes on humans. Ans: A pair of chromosomes having the same size and shape and carrying alleles for the same traits, are called homologous chromosomes. In human's body cells, there are 23 pairs of

homologous chromosomes. **93-** Differentiate b/w gene & allele. Ans: Gene: The part of DNA that contains the instructions for the synthesis of a particular protein is known as a gene. DNA of each chromosome contains thousands of genes. Allele: The alternate forms of a gene are called alleles. **94-** Define genetics. Ans: Genetics is the branch of biology in which we study genes and inheritance. **95-** What are nucleosomes? Ans: DNA wraps around histone proteins and forms round structures, called nucleosomes. **96-** Differentiate b/w transcription & translation. OR How is transcription different from translation? Ans: Transcription: During protein synthesis, the sequence of DNA nucleotides decides that what will be the sequence of amino acids. For this purpose, the specific sequence of DNA nucleotides is copied in the form of messenger RNA nucleotides. This process is called transcription. Translation: The mRNA carries the sequence of its nucleotides to ribosome. The ribosome reads this sequence and joins specific amino acids, according to it, to form protein. This step is known as translation. **97-** Name nitrogenous bases present in DNA molecule. Ans: Nitrogenous bases in DNA molecule: i-adenine ii-thymine iii- cytosine iv-guanine. **98-** Write two points of Watson-Crick model. Ans: According to the Watson-Crick model, a DNA molecule consists of two polynucleotide strands. These strands are coiled around each other in the form of a double helix. **99-** Explain law of segregation. Ans: During gamete formation, the genes of each pair segregate from each other and each gamete receives one gene from the pair. When the gametes of male and female parents unite, the resulting offspring again gets the genes in pairs. These conclusions were called the law of segregation. **100-** What is punnett square? Write its use. Ans: The Punnett square is a diagram that is used to predict an outcome of a particular cross or breeding experiment. The gametes of both parents having all possible genetic set-ups are determined. A checker board is used to cross all the possible gametes of one parent with all the gametes of other parent. In this way, a biologist can find all the possible genotypes of offspring. **101-** Define co-dominance and give example. Ans: Co-dominance is the situation where two different alleles of a gene pair express themselves completely, instead of showing a dominant-recessive relationship. As a result, the heterozygous organism shows a phenotype that is different from both homozygous parents. Example: An example of co-dominance is the expression of human blood group AB. **102-** Differentiate b/w homozygous & heterozygous genotype. Ans: Homozygous: The genotype that has two identical alleles of a trait, is known as homozygous genotype. Heterozygous: The genotype that has two different alleles of a trait, is known as heterozygous genotype. **103-** Write two sources of variations. Ans: i- The genetic recombination produced through crossing over results in gametes with variations. ii- Mutations are important source of variations. Mutations also happen during gametes formation through meiosis. **104-** What is theory of special creation? Ans: All living things had been created in their current form only a few thousand years ago. It is known as the "theory of special creation". **105-** Differentiate b/w natural selection & artificial selection. Ans: Natural selection: Natural selection is the process by which the better genetic variations become more common in successive generations of a population. The central concept of natural selection is the evolutionary fitness of an organism. Artificial selection (selective breeding): Artificial selection or selective breeding means intentional breeding between individuals for certain traits, or combination of traits. Example: Numerous breeds of sheep, goat, cow, hen etc. have been produced by artificial selection to increase the production of wool, meat, milk, eggs etc. **106-** differentiate b/w breeds and cultivars. Ans: In artificial selection, the bred animals are known as breeds while bred plants are known as cultivars. **107-** Explain Mendel's law of Independent Assortment. Ans: Law of Independent Assortment states as; "the alleles of a gene pair segregate independently from the alleles of other gene pair".

Unit 16: 108- Define ecosystem. Ans: The self-sufficient unit of an environment that is formed as a result of interactions between its biotic and abiotic components is known as an ecosystem. **109-** define population and community. Ans: Population: A group of the organisms of the same species inhabiting a specific geographical area at a particular time is called a population. Community: All the populations that live in a habitat and interact with one another are collectively called a community. **110-** What is trophic level? Ans: Trophic level is the level at which an organism feeds in food chain. The first trophic level is made of producers; the second of primary consumers and so on. **111-** Define food chain and give example. Ans: A food chain is a series of organisms within an ecosystem, in which each organism feeds on the one before it and is fed by the one after it. Example: $Grass \rightarrow Grasshopper \rightarrow Sparrow \rightarrow Hawk.$ **112-** Write a note on decomposers. Ans: Decomposers break down the complex organic compounds of dead matter into simple compounds. They secrete digestive enzymes into dead and

decaying plant and animal remains to digest the organic material. After digestion, decomposers absorb the products for their own use. The remaining substances are added to environment. Many types of bacteria and fungi are decomposers. **113-** What are ecological pyramids? Name its two types. Ans: A representation of the number of individuals or amount of biomass or energy present in various trophic levels of a food chain is known as ecological pyramids. Types: i- Pyramid of numbers ii- Pyramid of biomass. **114-** Define assimilation. Ans: The nitrates are absorbed by plants and are utilized for making proteins etc. Animals take nitrogenous components from plants. The utilization of nitrate by organisms is called assimilation. **115-** Define predation and give example. Ans: An interaction between animals in which one organism attacks, kills and feeds on other organism is called predation. All carnivore animals are predators. For example frog preys upon mosquito and fox preys upon rabbit. **116-** What is competition? Name its types. Ans: In ecosystems, the natural resources are usually in short supply. So there is a competition among the organisms of ecosystem for the utilization of resources. Types: The competition may be intraspecific or interspecific. **117-** Where are endo-parasites live? Give example. Ans: Endo-parasites live inside the body of host and get food and shelter. For example: Bacteria, Viruses, tapeworm, Ascaris etc. **118-** Define commensalism and give example. Ans: Commensalism is defined as a relationship among two organisms in which one partner is benefited while the other is neither benefited nor harmed. For example: Sucker fish attaches to the surface of sharks by its sucker. In this way, the shark provides easy transport to the sucker fish to new feeding grounds. **119-** Explain relationship b/w sucker fish and shark. Ans: There is commensalism between sucker fish and shark. Sucker fish attaches to the surface of sharks by its sucker. In this way, the shark provides easy transport to the sucker fish to new feeding grounds. **120-** What is eutrophication? Write its reason. Ans: Enrichment of water with inorganic nutrients is called eutrophication. When sewage and fertilizers reach water bodies, the nutrients present in them promote algal blooms there. Rich algal growth leads to increase in the number of the decomposers. **121-** What is global warming? Write its effects. Ans: Greenhouse effect is increasing the average temperature of the earth by trapping more heat. This phenomenon is known as global warming. Effects: Due to global warming, polar ice-caps and glaciers are melting faster than the time taken for new ice layers to form. Sea water is also expanding causing sea levels to rise. Due to melting glaciers, rivers overflow and cause floods. **122-** How is acid rain formed? Write its effects. Ans: Acid rain is formed on dissolving acidic air pollutants such as sulphur dioxide and nitrogen dioxide by rain water. Effects: i) Acid rain increases the acidity of the soil. ii) Acid rain directly damages the leaves of trees and plants and limiting their growth. iii) It is harmful for aquatic life. iv) It corrodes the lime stones and marble used in buildings. **123-** Define producers & consumers. Ans: Producers: These organisms are able to synthesize their food from inorganic raw materials. For example plants, algae etc. Consumers: They cannot synthesize their food and so depend upon producers for food. For example all animals, fungi etc. **124-** Define food web. Ans: Food web is defined as "a network of food chains which are interconnected at various trophic levels.

Unit 17: **125-** Define biotechnology. Ans: Biotechnology is defined as the use of living organisms in processes for the manufacture of useful products or for services. **126-** Explain human genome project. Ans: In 1990, the Human Genome Project was launched to map all the genes in human cell. The complete map of human genome was published in 2002. **127-** Write scope and importance of biotechnology. Ans: i- In the field of medicine, biotechnologists synthesized insulin and interferon from bacteria. ii- Gene therapy (treatment through genes) has become important in recent years. iii- Fermented foods, various vitamins and dairy products are produced by using microorganisms. iv- Biotechnology is also being used for dealing with environmental issues, like pollution control. **128-** What is fermenter? Write its use. Ans: Fermenter is a device that provides optimum environment to microorganisms to grow into a biomass, so that they can interact with a substrate, forming the product. Use: A fermenter optimizes the growth of the organisms by controlling many factors like nutrients, oxygen, growth inhibitors, pH and temperature. **129-** Define fermentation and name its types. Ans: Fermentation is the process in which there is incomplete oxidation-reduction of glucose. Types: i- Alcoholic fermentation ii- Lactic acid fermentation. **130-** Write two uses of fermentation. Ans: i- Fermentation is used in cereal products such as bread. ii- Dairy products such as cheese and yogurt are produced by fermentation. **131-** Write dairy products in fermentation. Ans: Dairy products such as cheese and yogurt are produced by fermentation. **132-** Write uses of ethanol. Ans: It is used as solvent. It is used in the production of vinegar and beverages. **133-** Write uses of glycerol. Ans:

Glycerol is used as solvent. It is used in the production of plastics, cosmetics and soaps. It is also used as sweetener. **134-** Explain gene therapy. Ans: Gene therapy is an advanced biotechnological technique which is used to cure diseases like cancer and AIDS. In this process, defective genes are supplemented or replaced by normal genes. **135-** What is recombinant DNA technology? Write its benefit. Ans: The vector DNA and the attached gene of interest are collectively called recombinant DNA. Benefit: The GMO contains the gene of interest and manufactures the desired product, which is isolated from culture medium. **136-** Define genetic engineering. Ans: Genetic engineering involves the artificial synthesis, modification, removal, addition and repair of the genetic material (DNA). **137-** Write two objectives of genetic engineering. Ans: i- Isolation of a particular gene or part of a gene for various purposes such as gene therapy. ii- Production of particular RNA and protein molecules. **138-** Write achievements of genetic engineering. Ans: Insulin is prepared for diabetes patients. ii- In 1977 an E.coli bacterium was created that was capable of synthesizing the human growth hormone. iii- The hormone thymosin which may prove effective against brain and lung cancer has been produced by genetically modified microorganisms (GMO). iv- Beta-endrophin, a pain killer is also produced by genetic engineering techniques. **139-** Define restriction endonucleases. OR write function of endonucleases. Ans: Special enzymes are used to cut the identified gene from the total DNA of donor organism. Such enzymes are called endonucleases. **140-** Write two uses of fermenters. Ans: i- A fermenter optimizes the growth of the organisms by controlling many factors like nutrients, oxygen, growth inhibitors, pH and temperature. ii- Massive amounts of medicines, insulin, human growth hormone and other proteins are being produced in fermenters. **141-** Define Alcoholic fermentation. Ans: Alcoholic fermentation is quite important and is used to produce bread, beer, wine and distilled spirits. In this process, carbon dioxide is removed from pyruvic acid.

Unit 18: 142- Define drug. Name any synthetic drug. Ans: Any substance that, when absorbed into the body of a living organism, alters normal body function is known as a drug. For example: aspirin. **143-** What are synthetic drugs? Give examples. Ans: Such drugs do not occur naturally but are synthesized in laboratory. Pharmaceutical companies produce these drugs e.g. tincture of iodine, powder form of silver nitrate. **144-** Name two drugs obtained from minerals. Ans: i- tincture of iodine, ii-powder form of silver nitrate. **145-** Explain drugs obtained from animals. Ans: Drugs obtained from animals are usually their glandular products. Fish liver oils, musk, bees' wax, certain hormones and antitoxins are obtained from animal sources. **146-** Define analgesics and give example. Ans: Painkiller drugs that reduce pain are called analgesics e.ge aspirin, paracetamol etc. **147-** Differentiate b/w sedatives & narcotics. Ans: These drugs interact with central nervous system to depress its activities. Sedative drugs induce dizziness, lethargy, slow brain function and depression e.g. diazepam, morphine. Narcotics: These drugs are strong painkiller and also used as addictive drugs. Commonly abused narcotics include heroin, morphine, methadone etc. **148-** Differentiate b/w antigens & antibodies. Ans: Pathogens contain special proteins called "antigens". When pathogens enter the body of host, these proteins stimulate the immune response in host i.e. synthesis of "antibodies". Antibodies bind to pathogens and destroy them. **149-** Define hallucinogens. Ans: Hallucinogens are the drugs that cause changes in perception, thought, emotion and consciousness. This group includes mescaline and psilocin. **150-** Differentiate b/w antibiotics & disinfectants. Ans: Antibiotics inhibit or kill bacteria and treat bacterial infections e.g. tetracycline, cephalosporin etc. Disinfectants destroy microorganisms found on non-living objects. **151-** Define narrow-spectrum and broad-spectrum antibiotics. Ans: Some antibiotics can be used to treat a wide range of infections and are known as broad-spectrum antibiotics. Others are only effective against a few types of bacteria and are called narrow-spectrum antibiotics. **152-** Differentiate b/w bactericidal and bacteriostatic antibiotics. Ans: Bactericidal are such antibiotics that kill bacteria while bacteriostatic antibiotics work by stopping bacterial growth. **153-** Explain tetracyclines. Ans: Tetracyclines are broad-spectrum bacteriostatic antibiotics. It is used in the treatment of infections of respiratory tract, urinary tract, intestine etc. **154-** What is teramycine. Ans: Teramycine is an antibiotic, which is used in treatment of many infections. **155-** Write achievement of Joseph Lister in biology. Ans: Joseph Lister promoted the idea of sterile surgery for the first time. He

introduced carbolic acid to sterilize surgical instruments and to clean wounds. **156-** Define vaccines. Ans: A vaccine is a material containing weakened or killed pathogens and is used to produce immunity to a disease by stimulating the production of antibodies. **157-** What is marijuana? Write its effects. Ans: Marijuana is a hallucinogen, which is smoked. It is obtained from the flowers, stems, and leaves of the marijuana plant. Effects: i- It affects the production of sperms in men. ii- It also weakens the short-term memory. **158-** What do you mean by social stigma? Ans: Social stigma means "the society dislikes the drug addicts because of their unpredictable behaviours".

Important Long Questions

Unit 10: 1- Define and explain cancer of lungs (page14). **2-** How cigarette smokes affect the respiratory system? (page15). **3-** Explain the mechanism of inhalation and exhalation (page7). **4-** Write symptoms, causes and treatment of Emphysema and pneumonia (page12). **5-** How do the different parts of the plant body exchange gases with environment (page2,3).

Unit 11: 6- How do the plants excrete extra water and salts from their bodies? (page19,20). **7-** What is functional unit of the kidney? Describe its structure (page23). **8-** Write function of kidneys (page24). **9-** Write symptoms and causes of kidney stones (page26,27).

Unit 12: 10- Explain the structure of nerve cell or neuron (page35). **11-** What is neuron? Write its types (page35,36). **12-** Explain types of feedback mechanism (page51). **13-** Write a note on paralysis (page52).

Unit 13: 14- What is arthritis? Write its types (page65). **15-** Define joint and its types (page62). **16-** Explain characteristics of cartilage and its types (page58). **17-** Explain bone and its types (page58,59). **18-** Explain the components of human skeleton (page60).

Unit 14: 19- What are the necessary conditions for germination of seeds (page84). **20-** What is AIDS? Write its causes (page89). **21-** Write four ways/types of natural vegetative propagation (page75). **22-** Write two methods of artificial vegetative propagation (page76). **23-** Explain male and female reproductive system of rabbit (page87,88).

Unit 15: 24- Explain Watson-Crick model of DNA (page95). **25-** Explain in-complete dominance with example (page102). **26-** Explain Mendel's law of Segregation (page98,99,100).

Unit 16: 27- What are biotic components of an ecosystem (page114). **28-** Define water pollution. Also write its effects (Page130,131). **29-** Define air pollution. Also write its effects (Page129). **30-** Write a note on nitrogen cycle (page120).

Unit 17: 31- Describe the achievements of genetic engineering in medicine, agriculture and environment (Page139, or 145,146,147). **32-** What is single-cell protein? Write its importance (page147). **33-** Write uses/ applications of fermentation (page141). **34-** Describe types of fermentation (page140). **35-** Describe objectives of Genetic engineering (page144). **36-** Explain basic steps of genetic engineering (page144,145).

Unit 18: 37- Describe the mode of action of vaccines (page156). 38- What are the sources of drugs? Give examples (page151). **39-** Describe the main groups of antibiotics (page155).