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Notes Bio 9th

Unit 1: 1-Define molecular biology. Ans: Molecular biology (bio-chemistry) deals with the study of the molecules of life; e.g. water, proteins, carbohydrates, lipids and nucleic acids. **2-** What are today's biological issues? Ans: Human population growth, infectious diseases, addictive drugs and pollution are the major biological issues today. **3-**Define genetics. Ans: The study of genes and their roles in inheritance is called genetics. **4-**What is biosphere level? OR Explain biosphere level and zone of life. Ans: The part of the earth inhabited by organisms' communities is known as biosphere. It constitutes all ecosystems and is also called the zone of life on earth. **5-**How is bio technology helping humans? OR What is importance of bio technology? Ans: Biologists study and work for the production of useful products through microorganisms. These products of biotechnology are more beneficial for human beings than earlier. **6-**Differentiate b/w population and community. Ans: Population: A population is defined as a group of organisms of the same species located at the same place, and have the capability of interbreeding. Community: A community is an assemblage of different populations, interacting with one another within the same environment. **7-** Name books of Jabir Bin Hayan and Abdul Malik Asmai. Ans: Famous books of Jabir Bin Hayan: "Al-Nabatat" and "Al-Haywan". Famous books of Abdul Malik Asmai: "Al-Abil (camel)", "Al-khail (horse)", "Al-wahoosh (animal)", and "Khalq al-ansan". **8-**Define unicellular organisms. Ans: In unicellular organisms, only one cell makes the life of an organism. All the life activities are carried out by the only one cell. Examples: Bacteria, Amoeba, Paramecium, algae, fungi etc. **9-**Name four unicellular organisms. Ans: Bacteria, Amoeba, Paramecium, algae, fungi etc. **10-**Differentiate b/w zoology and botany. Ans: Zoology: This division of biology deals with the study of animals. Botany: This division of biology deals with the study of plants. **11-** Explain Mustard plant. OR write two uses of mustard plant. OR write importance of mustard plant. Ans: The plant body is used as vegetable. Its seeds are used for extracting oil. **12-**Explain cell level and tissue level. Ans: Cell level: When organelles assemble together, units of life i.e. cells are formed. A cell is group of organelles, which is specialized to perform a specific function. Tissue level: In multicellular organisms, similar cells are organized into groups, and perform a common function. Such groups are called tissues. **13-** Define micro molecules and macro molecules. Ans: Micro molecules: Molecules with low molecular weight are called micro molecules. Examples: glucose, water, etc. Macro molecules: Molecules with high molecular weight are called macro molecules. Examples: starch, proteins, lipids etc. **14-**Define biogeography. Ans: It deals with study of the occurrence and distribution of different species of living organisms in different geographical regions of the world. **15-**Define species. Ans: A species is defined as a group of organisms capable of interbreeding and producing fertile offspring. **16-** what is scientific name of mustard plant? Write its two uses. Ans: Scientific name of mustard plant is *Brassica campestris*. Uses: The plant body is used as vegetable. Its seeds are used for extracting oil. **17-** Define biotechnology. Ans: The technology in which living things are used in different ways to help and benefit human beings is called biotechnology.

Unit 2: 18- Define biological problem. Ans: A biological problem is a question related to living organisms that is either asked by someone or comes in biologist's mind by himself. **19-** Define biological method. Ans: Biological method comprises the steps, a biologist adopts in order to solve a biological problem. **20-** Explain observations. And write its kinds. Ans: To solve a biological problem, a biologist recalls his/her previous observations or makes new ones. Observations are made with five senses of vision, hearing, smell, taste and touch. Kinds: i- Quantitative observations ii- Qualitative observations. **21-** write two examples of qualitative observations. Ans: i- The freezing point of water is lower than the boiling point. ii-A liter of water is heavier than a liter of ethanol. **22-** How observations are made according to biological method? Ans: Observations are made with five senses of vision, hearing, smell, taste and touch. **23-** Define hypothesis. OR How a hypothesis formed? Ans: Observations into data form and constructs a statement that may prove to be the answer of the biological problem under study. This tentative explanation of observations is called a

hypothesis. **24-**Write two examples of biological laws. Ans: i- Hardy-Weinberg Law ii- Mendal's Laws. **25-** Explain formulation of hypothesis. Ans: Biologist organizes his/her and others' observations into data form and constructs a statement that may prove to be the answer of the biological problem under study. This tentative explanation of observations is called a hypothesis. **26-** Write four characteristics of a hypothesis. Ans: i- It should be a general statement. ii-It should be a tentative idea. iii- It should agree with available observations. iv- It should be kept as simple as possible. **27-** What are deductions? Give example. OR How are deductions drawn? Ans: Deductions are logical consequences of hypothesis. This involves the use of "if-then" logic. For example: if mosquitoes are involved in the spread of malaria then " plasmodium should be present in mosquitoes". **28-** How Reporting the results take place? Ans: Biologists publish their findings in scientific journals and books, in talks at national and international meetings and seminars. Publishing of results is an essential part of scientific method. It allows other people to verify the results. **29-** What is "control" in experiments? Ans: In science when doing the experiment, it must be a controlled experiment. The scientist must contrast an "experimental group" with a "control group". The two groups are treated exactly alike except for the one variable being tested. For example, in an experiment to test the necessity of carbon dioxide for photosynthesis, one can contrast the control group (a plant with freely available carbon dioxide) with an experimental group (a plant with no carbon dioxide available). **30-** What are meanings of words "mala" and "aria"? Ans: The Italian words "mala" means bad and "aria" means air. **31-** Write observations of A.F.A King. Ans: i- People who slept outdoors were more likely to get malaria than those who slept indoors. ii- people who slept under fine nets were less likely to get malaria than those who did not use such nets. iii- Individuals who slept near a smoky fire usually did not get malaria. **32-** What is incubation period? Ans: the period between the entry of parasite in host and the appearance of symptoms is known as incubation period. **33-** Define ratio and proportion. Ans: Ratio: A relation between two quantities of the same kind is called ratio. Ratio may be expressed by putting division (÷) or colon (:) mark between the two numbers. Proportion: Proportion means to join two equal ratios by the sign of equality (=). **34-** Differentiate b/w quantitative and qualitative observations. Ans: Quantitative observations: Quantitative observations can be recorded in terms of numbers. Qualitative observations: These observations are recorded in terms of qualities. **35-** Differentiate b/w theory and law. Ans: Theory: The hypotheses that often tested and never rejected, are called theories. Law: Productive theory keeps on suggesting new hypotheses and so testing goes on. If a theory survives such doubtful approach and continues to be supported by experimental evidence, it becomes a law or principle.

Unit 3; 36- What is biodiversity? Ans: Biodiversity means variety within a species and among species. Biodiversity is a measure of the variety of organisms present in different ecosystems. **37-** What is basic unit of classification? Define it. Ans: Species is the basic unit of classification. Species: A species is a group of organisms which can interbreed freely among them and produce fertile offspring. **38-** Define taxonomic hierarchy. Ans: The groups into which organisms are classified are known as taxonomic categories or taxa. The taxa form a ladder, called taxonomic hierarchy. **39-** Define classification. Ans: Division of organisms into groups and sub-groups on the basis of similarities and differences is known as classification. **40-** What are the aims of classification? Ans: i- To determine similarities and differences among organisms so that they can be studied easily. ii- To find the evolutionary relationships among organisms. **41-** Which type of animals are produced in cross-breeding? Give example. OR Mule is a result of unnatural cross. Why? Ans: In unnatural crosses, two organisms related to two different but closely related species can cross-breed under artificial conditions. In such unnatural crosses, they produce infertile offspring. For example, a cross between a male donkey and a female horse produces an infertile offspring i.e. mule. **42-** Differentiate b/w autotrophs and heterotrophs. Ans: Autotrophs: The organisms that can prepare their own food from simple inorganic materials, are called autotrophs. For example, plants. Hetrotrophs: The organisms that cannot prepare their own food and depend on autotrophs or others, are called hetrotrophs. For example, animals. **43-** Write two characteristics of kingdom fungi. Ans: i- It includes eukaryotic multicellular heterotrophs. ii- such organisms are absorptive in their nutritional mode e.g. mushrooms. Most fungi are decomposers. **44-** What is status of viruses? OR Viruses are at the borderline of living and nonliving. Why? Ans: Viruses show

some characters of living organisms. Viruses contain either RNA or DNA. Viruses are parasite and they reproduce only in living cells. Due to their crystalline nature, they are considered as non-living. So viruses are at the borderline of living and non-living. **45-** Differentiate b/w prions and viroids. Ans: Prions are composed of protein only and viroids are composed of circular RNA only. Both these particles cause infectious diseases in certain plants. **46-** Define binomial nomenclature. Ans: Binomial nomenclature is the method of giving scientific names to living organisms. The scientific name of a species consists of two names. **47-** Define endangered species. Ans: a species is called endangered when it is at risk of extinction in near future. **48-** Write three species name which are endangered in Pakistan. Ans: Indus dolphin, Marco polo sheep, Houbara bustard. **49-** Define extinct species and give example. Ans: In an ecosystem, a species is called extinct when there is no doubt that the last individual of that species has died in that ecosystem. E.g. tiger. **50-** Write names of national animal and national bird of Pakistan. Ans: Markhor is the national animal and Chakor patridge is the national bird of Pakistan. **51-** Differentiate b/w flora and fauna. Ans: Flora is the biodiversity of plants and fauna is the biodiversity of animals. **52-** How fungi differ from plants? Ans: Fungi cannot prepare their own food, as fungi are decomposers. While plants can prepare their own food, so plants are producers. **53-** write two rules of binomial nomenclature. OR How do we write scientific names? Give example. Ans: i- Scientific names are usually printed in italics, such as *Homo sapiens*. When handwritten they are underlined such as Homo sapiens. ii-The first term (Generic name) always begins with capital letter, while species name is never capitalized.

Unit 4: 54- Differentiate b/w transmission electron microscope and scanning electron microscope. Ans: Transmission electron microscope: In TEM, electrons are transmitted through the specimen. It is used to study the internal cell structure. Scanning electron microscope: In SEM, electrons are reflected from the metal-coated surfaces. SEM is used to study the structure of cell surfaces. **55-** Differentiate b/w magnification and resolution. Ans: Magnification: Magnification is the increase in the apparent size of an object. Resolving power or Resolution: Resolving power or Resolution is the measure of the clarity of an image. It is the minimum distance at which two objects can be seen as separate objects. **56-** Define micrograph. Ans: A photograph taken through a microscope is called a micrograph. **57-** What is fluid mosaic model? Ans: According to this model, there is a lipid bilayer in which the protein molecules are embedded. The lipid bilayer gives fluidity and elasticity to membrane. **58-** Why is cell membrane known as semi permeable membrane? Ans: Cell membrane is known as semi permeable membrane because cell membrane functions as a semi permeable barrier, allowing a very few molecules across it while fencing the majority of chemicals inside cell. **59-** Differentiate b/w primary and secondary cell wall. Ans: The outer layer of plant cell wall is known as Primary cell wall and cellulose is the most common chemical in it. Some plant cells, for example xylem cells, have another wall in the inner side of primary wall, which is known as secondary cell wall. **60-** Differentiate b/w microtubules and microfilaments. Ans: Microtubules: Microtubules are made of tubulin protein and are used by cells to hold their shape. Microfilaments: Microfilaments are thinner and are made of actin protein. They help cells to change their shapes. **61-** What is the function of mitochondria? Ans: Mitochondria are the sites of aerobic respiration, and are the major energy production centres. **62-** Define plasmodesmata. Ans: There are pores in cell walls of adjacent cells, through which their cytoplasm is connected. These pores are called plasmodesmata. **63-** What are leucoplasts? And where are they found? Ans: Leucoplasts are colourless and store starch, proteins and lipids. They are present in the cells of those parts where food is stored. **64-** What is osmosis? Ans: Osmosis is the movement of water across a semi-permeable membrane from a solution of lesser solute concentration to a solution of higher solute concentration. **65-** Define passive diffusion OR facilitated diffusion. Ans: When a transport protein moves a substance from higher to lower concentration, the process is called facilitated diffusion. Facilitated diffusion is also a type of passive transport because there is no expenditure of energy in this process. **66-** Differentiate b/w phagocytosis & pinocytosis. Ans: In phagocytosis, cell takes in solid material while in pinocytosis cell takes in liquid, in the form of droplets. **67-** define plasmolysis. Ans: In a hypertonic environment a plant cell loses water and cytoplasm shrinks. The shrinking of cytoplasm is called plasmolysis. **68-** Define phragmoplast. Ans: Vesicles derived from the Golgi

appararus move to the middle of cell and fuse to form a membrane-bounded disk called cell plate or phragmoplast. **69-** Differentiate b/w endocytosis & exocytosis. Ans: Endocytosis: It is the process of cellular ingestion of bulky materials by the infolding of cell membrane. Exocytosis: It is the process through which bulky material is exported. **70-** Differentiate b/w simple tissue & compound tissue in plant. Ans: Simple tissues: The tissues which are made of single type of cells, are called simple tissues. Compound tissues: The tissues which are composed of more than one type of cells, are called compound or comples tissues. Example: xylem and phloem. **71-** Differentiate b/w hypotonic & hypertonic solution. Ans: A Hypertonic solution has relatively less solute. While a hypertonic solution has relatively more solute. **72-** Write two principles / rules of cell theory. Ans: i- All organisms are composed of one or more cells. ii- Cells are the smallest living things. It is the basic unit of organization of all organisms.

Unit 5: **73-** What is S-phase? Ans: In this phase, cell duplicates its chromosomes. As a result, each chromosome consists of two sister chromatids. **74-** Differentiate b/w disjunction and non-disjunction. Ans: During anaphase II sister chromosomes separate. It is called disjunction. Sometimes the separation is not normal and it is called non-disjunction. **75-**Define mitosis & meiosis. Ans: Mitosis: Mitosis is the type of cell division in which a cell divides into two daughter cells, each with the same number of chromosomes as were present in parent cell. Meiosis: Meiosis is a process in which a parent cell divides twice to form four daughter cells in such a way that the number of chromosomes in daughter cells is reduced to half compared to that in the parent cell. **76-** Define karyokinesis and cytokinesis. Ans: The division of nucleus is known as karyokinesis and the division of cytoplasm known as cytokinesis. **77-** What is regeneration? Ans: Some organisms can regenerate parts of their bodies. The production of new cells is achieved by mitosis. For example; sea star regenerates its lost arm through mitosis. **78-** Define chiasmata & crossing over. Ans: Chiasmata: The two non-sister chromatids of homologous chromosomes join each other at certain points along their length. These points of attachment are called chiasmata. Crossing over: The non-sister chromatids of homologous chromosomes exchange their segments and the phenomenon is known as crossing over. **79-** What is metastasis? What is its role in cancer? Ans: Such tumor scan that send cancer cells to other parts in body, where new tumors may form. This phenomenon is called metastasis (spreading of disease). Sometimes mutations occur and such genes and cells continue to divide. It results in growth of abnormal cells called tumors. **80-** Differentiate b/w somatic cells & germ lien cells. Ans: Somatic cells are those which form the body of organisms while germ line cells are those which give rise to gametes. Somatic cells undergo mitosis while germ line cells undergo meiosis. **81-** Define blebs & apoptotic bodies. Ans: Blebs: During apoptosis, cell membrane makes irregular buds known as blebs. Apoptotic bodies: Blebs break off from the cell and are called apoptotic bodies. **82-** Define Necrosis and write its causes. Ans: Necrosis is the accidental death of cells and living tissues. Causes: There are many causes of necrosis including injury, infection, cancer etc. **83-** Differentiate b/w benign & malignant. Ans: Tumors that remain in their original location are called benign tumors. But if they invade other tissues, they are called malignant tumors. **84-** What is cell cycle? Name its phases. Ans: Cell cycle is the series of events, from the time a cell is produced until it completes mitosis and produces new cells. Cell cycle consists of two major phases: i- interphase ii- M phase. **85-** Define phragmoplast OR cell plate. Ans: Vesicles derived from the Golgi appararus move to the middle of cell and fuse to form a membrane-bounded disk called cell plate or phragmoplast.

Unit 6: **86-** What are biocatalysts? Ans: During metabolism, chemicals are transformed from one form to the other by enzymes. Enzymes are crucial to metabolism because they act as biocatalysts. **87-** Explain metabolism. Ans: Metabolism is the set of biochemical reactions that occur in living organisms in order to maintain life. It allows organisms to grow and produce, maintain their structures and respond to their environments. **88-** Write two characteristics of enzymes. Ans: i- Almost all enzymes are proteins. i.e. they are made of amino acids. ii-Enzymes are usually very specific for the type of reaction and for the nature of their substrates. **89-** What is prosthetic group? Ans: if organic cofactors are tightly bound to enzyme, they are called prosthetic groups. **90-** What is saturation of active sites? Ans: When the active sites of all enzymes are occupies, any more substrate molecules do not find free active sites. This state is called

saturation of active sites. **91-** Define cofactors. Ans: Some enzymes that require non-protein molecules or ions to work, are called cofactors. **92-** Define active site. Ans: Only a small portion of enzyme molecule is directly involved in catalysis. This catalytic region is known as active site. **93-** Define activation energy. Ans: Minimum energy required to start a reaction, is called activation energy. **94-** What is denaturation of enzyme? Ans: Increase in temperature speeds up the rate of enzyme catalyzed reactions, but only to point. But when temperature is raised well above the optimum temperature, heat energy increases the vibrations of atoms of enzyme and the globular structure of enzyme is lost. This is known as the denaturation of enzyme. **95-** Differentiate b/w intracellular & extracellular enzymes. Ans: Intracellular Enzymes: Enzymes that work in the cytoplasm are known as intracellular enzymes. For example: Enzymes of glycolysis. Extracellular enzymes: Enzymes that work in the stomach cavity. For example: enzymes of pepsin. **96-** What are coenzymes? Write their function? Ans: If organic cofactors are loosely attached with enzyme, they are called coenzymes. Coenzymes transport chemical groups from one enzyme to another. **97-** Define optimum temperature. What is optimum temperature of enzymes in humans? Ans: Every enzyme works at its maximum rate at a specific temperature called the optimum temperature for that enzyme. The optimum temperature for the maximum working speed of human enzymes is 37°C. **98-** Explain induced-fit model. Ans: In 1958, an American biologist Danial Koshland proposed induced-fit model. According to this model, active is not a rigid structure rather it is molded into the required shape to perform its function. Induced fit model is more acceptable than "lock and key" model. **99-** Differentiate b/w anabolism & catabolism. Ans: Anabolism: It includes the biochemical reactions in which larger and complex molecules are synthesized. Catabolism: It includes the biochemical reactions, in which larger and complex molecules are broken down. Usually, energy is released in catabolism.

Unit 7: **100-** Define ATP and give example. OR ATP is the cell's energy currency. Why? OR Write the role of ATP for the cell. Ans: ATP is nucleotide called Adenosine Triphosphate. It is called cell's energy currency because it is the main energy source for majority of the cellular functions like synthesis of macromolecules, movement, transmission of nerve impulses, active transport etc. **101-** define bioenergetics. Ans: Bioenergetics is the study of energy relationships and energy transformations in living organisms. **102-** Differentiate b/w oxidation & reduction. Ans: The loss of electrons is called oxidation while the gain of electrons is called reduction. **103-** Define aerobic respiration and anaerobic respiration. Ans: Aerobic respiration: The cellular respiration occurring in the presence of oxygen is called aerobic respiration. Anaerobic respiration: The cellular respiration occurring in the absence of oxygen is called anaerobic respiration. **104-** What is glycolysis? And where is it occurs? Ans: In glycolysis, glucose molecule is broken into two molecules of pyruvic acid. It occurs in cytoplasm. **105-**What is photosynthesis? Write its chemical equation. Ans: Photosynthesis is the synthesis of glucose from carbon dioxide and water in the presence of sunlight and chlorophyll, with oxygen as a by-product.

Chemical Equation: $6CO_2 + 12H_2O + Light\ energy \xrightarrow{chlorophyll} C_6H_{12}O_6 + 6O_2 + 6H_2O$

106- Define pigment. Which colour lights are absorbed by chlorophyll? Ans: Pigments are the substances that absorb visible light. Chlorophylls absorb mainly blue and red lights. **107-** Define photolysis. Ans: In photosynthesis, during light reactions, light breaks water molecule and oxygen is released. It is known as photolysis of water. **108-** Define limiting factors. What are limiting factors in photosynthesis? Ans: Any environmental factor the absence or deficiency of which can decrease the rate of a metabolic reaction, is called limiting factors for that reaction. Limiting factors in photosynthesis: Light intensity, temperature, carbon dioxide concentration and availability of water. **109-** Define Alcoholic fermentation. Ans: It occurs in bacteria, yeast etc. In this type of anaerobic respiration, pyruvic acid is further broken down into alcohol and carbon dioxide. **110-** What is the role of light intensity in photosynthesis? Ans: The rate of photosynthesis varies with light intensity. It decreases as light intensity decreases and increases as light intensity increases. **111-** What is the role of temperature in photosynthesis? Ans: The rate of photosynthesis varies with temperature. It decreases as temperature decreases and increases as temperature increases. **112-** What is Lactic acid fermentation? Ans: It occurs in skeletl muscles of humans

and other animals during extreme physical activities. In this type of anaerobic respiration, each pyruvic aicd molecule is converted into lactic acid. **113-** What are anaerobes? Give examples. Ans: Even today when free oxygen is available, some organisms including some bacteria and some fungi get energy from anaerobic respiration and are called anaerobes. Examples: Bacteria, fungi.

Unit 8: **114-** Differentiate b/w Nutrients & nutrition. Ans: Nutrients: Nutrients are the elements and compounds that an organism obtains and uses for energy or for the synthesis of new materials. Nutrition: The process in which food is obtained or prepared, absorbed and converted into body substances for growth and energy, is called nutrition. **115-** Name components of human food. Ans: Nutrients used by humans include carbohydrates, lipids, nucleic acids, proteins, minerals and vitamins. **116-** Define macronutrients and micronutrients with examples. Ans: Macronutrients: The nutrients which are required in large quantities are called macronutrients e.g. carbon, hydrogen, oxygen, nitrogen, magnesium potassium etc. Micronutrients: The nutrients which are required in small quantities are called macronutrients e.g. iron, boron, chlorine, zinc etc. **117-** Name diseases due to deficiency of vitamin D. Ans: In children, vitamin-D deficiency leads to rickets, a condition in which bones weaken and bow under pressure. In adults, vitamin-D deficiency causes osteomalacia, or "softening bones", increasing the risk for gractures in bones. **118-** Differentiate b/w major minerals & trace minerals. Ans: Major minerals are required in the amounts of 100mg or more per day. Examples: sodium, potassium, calcium etc. Trace minerals are required in amounts less than 100mg per day. Examples: iron, zinc, copper etc. **119-** What is role of water in human body? Ans: Approximately 60% of the adult human body is composed of water. Nearly all life-sustaining chemical reactions require an aqueous (watery) environment. Another essential role of water is to maintain body temperature through evaporation, as in sweating. **120-** Differentiate b/e saturated and Unsaturated fatty acids. Ans: Saturated fatty acids: Saturated fatty acids have all of their carbon atoms bounded to hydrogen atoms, e.g. butter. Unsaturated fatty acids: Unsaturated fatty acids have some their carbon atoms double-bounded in place of a hydrogen atom, e.g. sunflower oil. **121-** Define fertilizers. Ans: Addition of certain materials to soil result in plants desirable characteristics such as more fruit, faster growth, more attractive flowers etc. such materials are named as fertilizers. **122-** What is classification of fertilizers? Ans: Fertilizers are broadly classified as organic and inorganic. Organic fertilizers: Organic fertilizers are derived from plant and animal materials. They are more complex and take time to be broken down into forms usable by plants. Manure and compost are used as organic fertilizers. Inorganic fertilizers: Naturally occurring inorganic fertilizers include rock phosphate, elemental sulfur and gypsum. Most inorganic fertilizers dissolve readily in water and are immediately available to plants for uptake. **123-** What is drought? Ans: A drought is a period of time when there is not enough water to support agricultural and human needs. Drought is usually due to a long period of below normal rainfall. Droughts decrease or even stop the crop yields and it results in famine. **124-** Define dietary fibre. Ans: Dietary fibre is the part of human food that is indigestible. It is found only in plant foods and it moves undigested through stomach and small intestine and into colon. **125-** Define balanced diet. Ans: A balanced diet may be defined as the one which contains all the essential nutrients in correct proportion for the normal growth and development of body. **126-** Define peristalsis. Ans: Peristalsis moves food from oral cavity to rectum. Peristalsis is defined as the waves of contraction and relaxation in the smooth muscles of alimentary canal walls. **127-** Define appendix. Ans: A non-functional finger-like process called appendix arises from the blind end of caecum. **128-** Define malnutrition. Name two forms of malnutrition. Ans: Problems related to nutrition are grouped as malnutrition. Most commonly, malnourished people either do not have enough calories in their diet, or eat a diet that lacks protein, vitamins or trace minerals. Forms of malnutrition: Common forms of malnutrition include protein-energy malnutrition, mineral deficiency disease and over-intake of nutrients. **129-** Define scurvy and write its symptoms. Ans: The disease known as scurvy results from lack of vitamin C. In this condition, the synthesized collagen is unstable. Symptoms: muscle and joint pain, swollen and bleeding gums, slow wounds healing, and dry skin. **130-** What is role of pepsin in stomach? Ans: Pepsin partially digests the protein portion of food into polypeptides and shorter peptide chains. **131-** Define bolus and chyme. Ans: Bolus: During the processes of chewing, lubrication and semi-digestion, the pieces of food

are rolled up by the tongue into small, slippery, spherical mass called bolus. Chyme: The starch in our bite of bread and the protein in mutton have been partially digested and the food has been converted to a soup-like mixture called chyme. **132-** Differentiate b/w ingestion and digestion. Ans: The process of taking in food is called ingestion. While the process of breaking up complex substances into simpler substances is known as digestion. **133-** Sources of Vitamin A: Leafy vegetables (spinach, carrots), yellow fruits, fish, liver, egg, milk and butter. **134-** Sources of Vitamin C: Citrus fruits, leafy green vegetables, beef liver.

Unit 9: **135-** Define transpiration. Ans: Transpiration is the loss of water from plants surface through evaporation. Most of the transpiration occurs through stomata and is called stomatal transpiration. **136-** Define transpirational pull. Ans: When one water molecule moves up in the xylem of the leaf, it creates a pulling force that continues all the way to root. This pulling force created by the transpiration of water is called transpirational pull. **137-** Define phloem. OR what is role of phloem in plants? Ans: Phloem tissue is responsible for the conduction of dissolved organic matter (food) between different parts of plant body. **138-** How is plasma separated from blood? Ans: Blood is taken from an artery and an anticoagulant (chemical that inhibits blood clotting) is mixed in it. After about 5 minutes, plasma separates from blood cells, which settle down. **139-** Define antigen. Ans: An antigen is a molecule that can stimulate an immune response (antibody production etc.). **140-** What is role of white blood cells (leukocytes) in human blood? OR What is function of white blood cells? Ans: White blood cells play role in body's defense by different ways like: Engulf small particles, Release anticoagulants, Produce antibodies. **141-** Define heartbeat. OR Explain cardiac cycle and heartbeat. Ans: The alternating relaxations and contractions make up the cardiac cycle and one complete cardiac cycle makes one heartbeat. **142-** What is systemic circulation? Ans: The pathway on which oxygenated blood is carried from heart to body tissues and in return deoxygenated blood is carried from body tissues to heart is called systemic circulation or systemic circuit. **143-** What is closed circulation system? Ans: Closed circulation system means that blood never leaves the network of arteries, veins and capillaries. **144-** Why is human heart known as double pump? Ans: Human heart works as a double pump. It receives deoxygenated (with less oxygen) blood from body and pumps it to lungs. At the same time, it receives oxygenated (with more oxygen) blood from lungs and pumps it to all body. **145-** Define capillaries. Ans: Capillaries are the smallest blood vessels present in tissues. These are formed by the divisions of arterioles. The exchange of materials between blood and tissues fluid is carried out through capillaries. **146-** What is vascular surgery? Ans: Vascular surgery is a field in surgery in which diseases of arteries and veins are managed b surgical methods. A vascular surgeon treats the diseases of all parts of blood circulatory system except that of heart and brain. **147-** Define source and sink. Ans: Sources include the exporting organs, typically leaf or storage organ. Sinks are the areas of active metabolism or storage e.g. roots, tubers, developing fruits and leaves etc.

Questions about Dengue: **148-** Write symptoms of dengue fever. Ans: i- severe headache ii- high temperature iii-rashes on the skin iv- pain in joints. **149-** Write four preventive measures for dengue fever. Ans: i-wear long sleeved shirts and long trousers ii-Apply mosquito repellents on the body iii-Use bed net, which may be treated with insecticide iv-spray insecticide in every corner of your house v-use coils and mats to avoid mosquito bites. **150-** Name the mosquito that transmits dengue. OR Which organism spreads dengue fever? Ans: Aedes mosquito transmits dengue fever in human beings. **151-** In which regions of the world, dengue fever is common? Ans: Dengue fever is common in moderate climatic regions such as Sri Lanka, Bangladesh, India, Pakistan etc.

Important Long Questions

Unit 1: **1-** Explain five branches of biology (Page3). **2-**Write five careers in biology (page5). **3-** What is cellular organization? Explain its three types (page10,11,12). **4-** Explain relationship of biology to other sciences (page4). **5-** Explain: cell level, tissue level, organ, organ system level, population level, community level.

Unit 3: **6-** Write note on the five kingdoms system (page 37,38).

Unit 4: **7-** What are plastids? Explain its three types (page62). **8-** Differentiate b/w prokaryotic & eukaryotic cells (page66). **9-** write note on epithelial tissue (page75). **10-** write a note on nucleus (page60). **11-** write note on compound tissues (page81,82).

Unit 5: **12-**write note on apoptosis and necrosis (page102,103). **13-** what is significance of meiosis (page100).

Unit 6: **14-** write factors affecting the rate of enzyme action (page109,110). **15-** write uses of enzymes (page109). **16-** Explain mechanism of enzyme action (page111,112). **17-** write characteristics of enzymes (page108,109).

Unit 7: **18-**Explain mechanism of photosynthesis (page121). **19-** Explain mechanism of respiration (page132). **20-** Define Anaerobic respiration and its types (page131). **21-** What are limiting factors in photosynthesis (page124). **22-** Differentiate b/w photosynthesis & respiration.

Unit 8: **23-**write effects of malnutrition (page155). **24-** write four functions of liver (page164). 25- Importance of fertilizers (page142).

Unit 9: **26-** Define transpiration. Which factors affect the rate of transpiration? (page175). **27-** write a note on myocardial infarction (page203). **28-** write note on leukaemia (blood cancer) and thalassaemia (page188,189).