Terminology – Biology Class 10

Chapter 1 Cell Division

Leptotene: It is the first stage of Prophase I in meiosis in which the chromosomes become visible as single threads.

Zygotene: It is the second substage of Prophase I in which pairing of homologous chromosomes(Synapsis) occurs. Each pair of chromosomes are called bivalent.

Pachytene: It is the third substage of Prophase during which the crossing over begins.

Diplotene: It is the fourth substage of Prophase during which crossing over continues and two homologous chromosomes in each pair begin to separate. They are held together at points called chiasmata.

Diakinesis: It is the last substage of prophase in which nuclear membrane and nucleolus disapppear. Spindle begins to be formed at the end of this stage.

Cell Division: It is a process by which a cell divides into two or more daughter cells.

Chromatids: Two identical parts of a chromosome are called sister chromatids.

Centromeres: It is a part of chromosome through which chromatids are linked.

Centrioles: Centriole is a cell structure composed mainly of Protein, located in the cytoplasm near the nuclear envelope.

Spindle: A fan like microtubule structure formed during mitosis/meiosis that helps separate the chromosomes to the opposite ends is called spindle.

Cell Plate: It is a disc-like structure that forms in plant cells to form the wall between daughter cells when the cytoplasm divides during cytokinesis.

Cleavage Furrow: Structure that forms in animal cells when the cytoplasm divides during cytokinesis.

Chromosomes: Chromosomes are thread-like structure found in DNA that carry genetic information of an organism in the form of genes.

Chromatin: Chromatin is a complex combination of DNA and proteins. They condense to form chromosomes and are present in the nuclei of eukaryotic cells.

Chapter 2 Fundamentals of Genetics

Heredity: The process of transmission of parental characters to the progeny from generations to generations is called heredity.

Variation: Differences in characters of progeny of some parents and individuals of same species.

Dominant Character: The character that is expressed in first generation when any two individuals of contrasting characters breed is called dominant character and the phenomenon is called dominance.

Linkage: The phenomenon of inheritance of a group of genes together during meiosis is called linkage.

Mutation: Any change brought about into the genetic composition through external or internal factors which may be passed to subsequent generations is termed as mutation.

Crossing-over: The phenomenon of the exchange of genetic material between two non-sister chromatids of homologous chromosomes during meiosis is called crossing over.

Heterosomes: Chromosomes found in reproductive cell and which are responsible for the sex of a child.

Recessive character: The character which remains hidden in F1 generation and expressed in the second generation.

Genotype: The genetic composition of any organism is called genotype.

Alleles: Alleles are the alternative forms of the same gene. For example, tallness and dwarfness are the two alternative forms of a gene for height and are called alleles. Similarly, attached ear lobes and free ear lobes are alleles for the type of ear lobes.

Chapter 3 Absorption By Roots

Diffusion: It is the free movement of molecules of solid, liquid or gas from their higher concentration area to their lower concentration area when the two are in direct contact.

Osmosis: Osmosis is special type of diffusion which involves the movement of solvent molecules from a region of higher concentration to the region of their lower concentration across a semi permeable membrane.

Endosmosis: It is the movement of water molecules from the surroundings into the cell through a semi permeable membrane.

Exosmosis: It is the outward diffusion of water molecules from the cell into the outer surroundings through a semi permeable mebrane.

Plasmolysis: It is the shrinkage of protoplasm from cell wall when a cell is placed in a hypertonic solution.

Ascent of sap: The upward of water along with the minerals from the root to aerial parts of the plant body is called ascent of sap or translocation of water.

Root Pressure: It is the transverse osmotic pressure within the cells of a root system that cause sap to rise through a plant system to the leaves.

Transpiration pull: Suction force that helps in drawing the water upward from roots to the leaves of a plant is known as transpiration pull.

Chapter 4 Transpiration

Transpiration: It is defined as the loss of water in the form of water vapour from the aerial parts of a plant.

Cuticular transpiration: Transpiration that takes place through the cuticle (waxy layer) covering the leaves is called cuticular transpiration.

Lenticular transpiration: Transpiration that takes place through the small openings in the corky tissue covering the stem is called lenticular transpiration.

Stomatal transpiration: Transpiration that takes place through the stomata of the leaves is called Stomatal transpiration.

Guttation: The exudation of water in the form of water droplets along with sugar and mineral salts through specialized openings i.e., hydathodes, present along the margins of a leaf is called Guttation.

Bleeding: Exudation of cell sap or watery solution from the injured parts of a plant.

Lenticel: It is a pore in the periderm of a woody stem. It acts as an organ of gaseous exchange.

Hydathode: A water secreting gland found on the edges and tips of leaves of many plants.

Wilting: The collapsing of plant cells due to unfavourable water relations is called wilting. It may be due to excessive transpiration as compared to absorption of water by roots. It may also be due to blocking of the xylem elements, pathogens or parasites.

Chapter 5 Photosynthesis

ATP: Adenosine triphosphate is a complex organic molecule that acts as an energy currency in the cell.

Free energy: The amount of energy available to do work in a biochemical reaction.

NADPH: It is a reduced form of nicotinamide adenine dinucleotide phosphate

($NADP^+$), and a small water soluble molecule that acts as a hydrogen carrier in biochemical reactions.

Plastoquinone: It is a small molecule involved in electron and proton transfer in photosynthesis.

Photosynthesis: The physical-chemical process by which certain chlorophyll containing organisms use light energy for the biosynthesis of organic molecules.

Photosynthetic membrane: Photosynthetic membrane which is also known as the thylakoid membrane, is a bilayer of lipid molecules in which proteins are embedded. It is a site of light reaction of photosynthesis during which light energy is converted into chemical energy.

Phosphorylation: The phosphorylation is a biochemical process which involves covalent attachment of a phosphate group to an organic molecule.

NADP (Nicotinamide adenine dinucleotide phosphate): It is a coenzyme which acts as a reducing agent in anabolic reactions. During electron transfer, NADP gains electron from hydrogen and get reduced to $NADPH_2$.

Photophosphorylation: The phosphorylation of ADP to form ATP in the chloroplast during the light dependent reaction of photosynthesis is called photophosphorylation.

Carbon cycle: The various processes resulting in the circulation of carbon in different forms constitute the carbon cycle.

Chapter 6 Chemical coordination in plants

Parthenocarpy: Parthenocarpy is the production of fruits without the fertilization of egg in the ovary.

Apical dominance: It is a phenomenon through which the apical bud suppresses the growth of the lateral buds.

Bolting: It is defined as the unusual lengthening of plant stem by inducing plant hormones such as gibberellins to produce stem with long internodes.

Epinasty: A nastic movement in which leaf is bent downwards as the upper surface of the leaf part shows more growth in comparison to the lower surface is known as epinasty. The phenomenon is controlled by ethylene in many plants.

Antitranspirants: Hormones that are applied to plants to control transpiration are called antitranspirants.

Tropism: The phenomenon of directional movement of plant in response to stimulus of water is called hydrotropism.

Phototropism: The tropic movement of plant in response to stimulus of light is called phototropism.

Hydrotropism: The tropic movement of plant in response to stimulus of water is called Hydrotropism.

Chapter 7 The Circulatory System

Blood pressure: The pressure exerted on the elastic walls of the arteries by the blood while flowing in the arteries is called blood pressure. It is greater during systole(contraction) than during diastole(relaxation) of the heart. In a normal adult, the blood pressure is 120/80 where systolic is 120 and diastolic pressure is 80 mm of Hg(mercury).

Pulse Rate: Pulse rate indicates the rate at which the heart beats. Each heart beat results from the contraction (Systole) and relaxation(diastole) of the heart. On an average, the systole and diastole take 0.8 seconds, which makes 75 beats per minute.

Double circulation: In mammals, the heart produces two separate circulations, the pulmonary to the lungs and systemic to the rest of the body. These two separate circulations are jointly called double circulation. From the right ventricle, deoxygenated blood goes to the lungs for purification and comes back to left auricle through pulmonary vein which is known as pulmonary circulation. Distribution of oxygenated blood from left ventricle to different parts of the body and back to the heart as deoxygenated blood is known as systemic circulation.

Hepatic portal system: System of veins carrying blood capillaries of intestine to the liver in mammals is called hepatic portal system. The blood from the intestine carries digested carbohydrates and proteins, i.e., glucose and amino acids to the liver where they are converted into glycogen and urea respectively.

Diapedesis: The passage of white blood corpuscles through the unruptured walls of blood vessels is known as diapedesis. It helps in engulfing the germs and also protects the body from getting infected.

Hematopoiesis: Formation of blood corpuscles like WBC and RBC by the bone marrow and lymph nodes is called hematopoiesis. Bone marrow and lymph nodes are called haematopoietic tissues.

Phagocytosis: Phagocytosis is a process by which certain cells like WBCs engulf the damaged tissues, bacteria and germs and ingests them.

Electrocardiogram: It is the recorded report of an electrocardiograph which is produced by the heart muscles during the cardiac cycle of contraction and relaxation.

Pacemaker: The specialized tissue present on the wall of the right auricle which controls the movement of heart muscles is known as pacemaker.

Chapter 8 The Excretory system

Bowman's capsule: It is a thin walled cup like hollow ball pressed deep on one side. Its hollow internal space continues into the kidney tubule.

Glomerulus: A single afferent arteriole of the renal artery breaks up into a number of capillary branches to form the glomerulus. The blood in the glomerulus is subjected to higher pressure since the diameter of the afferent arteriole is wider than that of the efferent arteriole that leaves the glomerulus, so ultrafiltration takes place.

Loop of Henle: It is a hair-pin shaped structure and it is not convoluted. It runs in medulla to turn back and to renter the cortex to continue into the next convoluted region of the tubule.

Ureter: From the hilum of a kidney, arises a narrow tube called ureter which carries the urine collected from the pelvis of the kidney to the urinary bladder which is situated at the base of the abdomen.

Urinary bladder: It is a large, thin walled, highly distensible muscular bag-like organ situated at the base of the abdomen. The urinary bladder receives the urine from the ureter. The wall of the bladder relaxes and the bladder expands to hold and store the urine.

Ureotelism: Certain animals predominantly excrete urea as their nitrogenous waste. Such animals are called ureotelic animals and the phenomenon is termed as ureotelism.

Malpighian body: It is a part of the nephron consisting of the Glomerulus and the Bowman's capsule.

Tubular Re-absorption: The process by which proximal and distal tubules reabsorb all the useful products present in the glomerular filtrate.

Chapter 9 The Nervous system and Sense Organs

Nerve: It is a thread like white structure which emerges from the brain and the spinal cord. It consists of a large number of axons or nerve fibres surrounded by a connective tissue sheath. The nerves arising from the brain are called cranial nerves while those arising from the spinal cord are called spinal nerves.

Mixed Nerve: It is one which carries both sensory and motor fibres. For example, a spinal nerve. These are mixed nerves and they have two separate connections with the spinal cord – (i) A dorsal root which is a sensory root and (ii) A ventral root which is a motor root.

Cyton: Cyton is the cell body of a nerve cell(neuron), containing the cytoplasm and the cell nucleus.

Ganglion: A ganglion is a small, solid mass of nerve tissue containing numerous cell bodies of a neuron.

Voluntary actions: Voluntary actions are responses to the stimuli that are consciously coordinated and controlled by the brain.

Synapse: It is a gap between two neurons where dendrites of one neuron meet the axon of the next neuron but they never unite, as there is no continuity between the nerve cells.

Reflex action: It is an instantaneous and involuntary response to a stimulus. The impulse passes from the sensory cells of the receptor organ along the dorsal root into the spinal cord. From here, two messages pass simultaneously – one to the brain and the other travels out along the ventral root to reach the muscle which immediately responds.

Natural Reflex: It is the one in which no previous experience or learning is required and are inborn and protective, eg, reflex of the eyelid.

Accommodation of the eye: It is the process of adjusting the focal length of the lens according to the near or distant objects so that the image can be focused on the retina clearly. This is done by altering the curvature of the lens by the contraction or relaxation of the ciliary muscles.

Hypermetropia: Hypermetropia is a condition of the eye in which the near objects are not seen as the image of the objects is formed behind the retina. It is corrected by using convex lens.

Presbyopia: It is a natural condition affecting old people in which near objects cannot be seen clearly. Their lens loses flexibility resulting in a kind of far-sightedness. This is corrected by bifocal lens.

Astigmatism: It is a defect in which some parts of the object are seen clearly while others are seen blurred. It arises due to the uneven curvature of the cornea. This is corrected by using cylindrical lenses.

Cataract: It is a condition in which the lens turns opaque and the vision is cut down even to total blindness. It can be corrected by surgically removing the lens and replacing with artificial one and also by using spectacles with highly convex lenses.

Chapter 10 The Endocrine system

Exocrine glands: The glands which have ducts to discharge their secretions in the body are called exocrine glands.

Cretinism: Cretinism is a condition of mental retardation and dwarfism due to insufficient secretion of thyroxine by the thyroid gland during fetal life or early infancy.

Myxoedema: Myxoedema is a condition that occurs because of the under-secretion of thyroxine in adults. It is characterized by low metabolic rate and symptoms include slow speech, enlarged tongue, puffiness of the face etc.

Castration: It is the removal of the testes or ovaries from an animal.

Feedback mechanism: An in-built mechanism that regulates the production and release of hormones in the body is termed as feedback mechanism.

Cushing's syndrome: It is a condition which arises due to excessive production of ACTH (adrenocorticotropic hormone). Its symptoms include obesity, hyper-glycemia, weakness, high blood pressure etc.

Acromegaly: A condition that develops when pituitary gland produces too much growth hormone during adulthood is termed as acromegaly.

Chapter 11 The Reproductive system

Vas deferens: The vas deferens also known as the sperm duct, is a duct which receives the sperms from the epididymis and passes it to the urethra after receiving the secretions from the seminal vesicles, prostate gland and cowper's gland.

Penis: The penis is a muscular and highly vascular copulatory organ composed of erectile tissue which serves to deposit the semen of the male into the vagina of the female during copulation or mating.

Graafian follicle: Graafian follicle is a fluid filled follicle in the ovary which ruptures after every 28 days to release an ovum.

Gametogenesis: Gametogenesis is a process by which gametes are produced in an organism. Formation of sperms in testes is called spermatogenesis and formation of ova in ovary is called oogenesis.

Androgens: These are the male sex hormones that have been produced by the interstitial cells of the testes. The androgens are essential for the maturation of sex organs, development of the sperm and for promoting secondary sexual characters such as beard, moustache, the deepening of the voice etc.

Cowper's gland: Cowper's gland is either of the two-pea shaped gland located beneath the prostate gland. It secretes a fluid which mixes with the sperms, offers chemical protection and supports the swimming motion of the sperms. The mucous secretion of the cowper's gland serves as lubricant and helps to decrease the acidity of the semen.

Scrotum: Scrotum is a special sac in which two testes are present. It is located outside the abdominal cavity so that the testes are maintained at a temperature lower than the body temperature.

Parturition of birth: It is the expelling of the foetus from the body of the mother. It begins by the contraction of the uterine walls resulting in labour pains.

Foetus: Foetus is a fertilized zygote that gets implanted in the endometrial lining of the uterus after undergoing cell division.

Secondary sexual characters: These are the characters that develop at the time of puberty due to hormonal activity. In a female, there is development of breasts and change in body shape and size of hips. In a male, there is development of beard and moustache, deepening of the voice, etc.

Tubectomy: It is an operative procedure in females in which a small segment of oviduct is removed to prevent the entry of ovum in the uterus. This is a permanent method to avoid pregnancy.

Vasectomy: It is an operative procedure in males in which a small segment of the vas deferens is removed.

Chapter 12 Human Population

Age ratio: The number of individuals belonging to different age groups is called Age ratio.

Natality: The number of children born per 1000 of living population per year is termed as natality.

Physical enumeration: It is the estimation of human population by physically counting of individuals per unit area. The Census Bureau physically verifies the number of persons living in each house.

Population Density: Population density is the number of individuals living per square kilometre(km^2) any given time.

Death rate: It is defined as the number of individuals eliminated from a population by death in a year per 1000 living population. It is also called Mortality rate.

Emigration: Emigration is the act of leaving one region in order to settle elsewhere permanently. This results in decrease in the population of that region.

Carrying capacity: The maximum number of individuals that an environment can support without undergoing any deterioration is called the carrying capacity. Available space, water, resources etc., determine it.

IUD: Intra Uterine Device (IUD) is a contraceptive device placed in the uterine passage to prevent the sperms from reaching the ovum. This checks pregnancy.

Chapter 13 Human Evolution

Biological Evolution: It is a long process of change in the characteristics of population of the organisms over successive generations.

Mutation: Any change brought about into the genetic composition through external or internal factors which may be passed to subsequent generations is termed as mutation.

Natural selection or Survival of the fittest: The process of selective choosing of individuals with useful variations from a population with mixed characters was termed as Natural selection by Darwin and Survival of the fittest by Wallace.

Vestigial Organs: The organs that were completely developed and functional in the ancestors but are in a reduced, non-functional form I the current species are known as vestigial organs.

Adaptive Characters: The characters developed during the life time of an individual are called acquired or adaptive characters.

Industrial Melanism: The phenomenon of evolution of dark body colours(melanic forms) in animal species during the time of industrial revolution is known as industrial melanism.

Chapter 14 Pollution

Noise Pollution: The unfavourable alteration in the environment brought about by an unreasonably loud noise affecting our physical and mental health is called noise pollution.

Pollution: Addition of any unwanted substance in the environment that may cause harm to the environment is called pollution.

Pollutant: Any substance which on adding to the environments pollutes the environment is called pollutant.

Particulate matter: The fine solid and liquid particles present in the atmosphere that causes serious health disease are called particulate matter.

Smog: Smog is a combination of smoke and fog.

Bio-fertilizer: The micro-organisms which, when added to the soil, increase the fertilityof the soil, are termed as bio-fertilizer.

Manure: Any organic matter of plant or animal source which when added to soil improves its quality to raise better crops is called manure.

Decibel: The unit to measure the intensity of sound is called decibel.

Ammonification: The process of breaking down of nitrogenous organic matter into ammonia by the action of micro-organisms is called ammonification.

Nitrification: The process of converting ammonia into nitrite and nitrates by the action of micro-organisms in the soil, is called nitrification.