

## **CLASS XI**

### **Unit I: Chapter 2, Pg. 17 along with 1st para after the sixth line**

#### **Three-domain of life**

The three-domain system has also been proposed that divides the Kingdom Monera into two domains, leaving the remaining eukaryotic kingdoms in the third domain and there by a six kingdom classification. You will learn about this system in detail at higher classes.

### **Unit I: Chapter 3, Pg. 40, after eighth line**

#### **Classification of angiosperms upto class and their characteristic features**

The dicotyledons are characterised by seeds having two cotyledons, reticulate venations in leaves, and tetramerous or pentamerous flowers i.e having four or five members in each floral whorls. The monocotyledons on the other hand are characterised by single cotyledonous seeds, parallel venation in leaves, and trimerous flowers having three members in each floral whorls.

### **Unit IV: Chapter 13, Pg. 206 along with 1st para after the fourth line**

#### **Photosynthesis as a means of Autotrophic nutrition**

The green plants make or rather synthesise the food they need by Photosynthesis and therefore called autotrophs. You have already learnt that the autotrophic nutrition is found only in plants and all other organisms that depend on the green plants for food are heterotrophs.

### **Unit IV: Chapter 15, Pg. 239 along with 1st para after the last line**

#### **Seed germination**

The first step in the process of plant growth is seed germination. The seed germinates when favourable conditions for growth exist in the environment. In absence of such favourable conditions the seeds do not germinate and goes into a period of suspended growth or rest. Once favourable conditions return the seeds resume metabolic activities and growth takes place.

### **Unit IV: Chapter 15, Pg. 252 as section 15.7**

#### **Seed dormancy**

There are certain seeds which fail to germinate even when external conditions are favourable. Such seeds are understood to be undergoing a period of dormancy which is controlled not by external environment but are under endogenous control or conditions within the seed itself. Impermeable and hard seed coat; presence of chemical inhibitors such as abscissic acids, phenolic acids, para-ascorbic acid; and immature embryos are some of the reasons which causes seed dormancy. This dormancy however can be overcome through natural means and various other man made measures. For eg. the seed coat barrier in some seeds can be broken by mechanical abrasions using knives, sandpaper etc. or vigorous shaking. In nature, these abrasions are caused by microbial action, and passage through digestive tract of animals. Effect of inhibitory substances can be removed by subjecting the seeds to chilling conditions or by application of certain chemicals like gibberellic acid and nitrates. Changing the

environmental conditions, such as light and temperature are other methods to overcome seed dormancy.

#### **Unit V: Chapter 16; 16.2 Pg. 264 (before 16.3 absorption of digested product)**

#### **Calorific value of Protein, Carbohydrate and Fat (Not for evaluation Box item)**

The energy requirements of animals, and the energy content of food, are expressed in terms of measure of heat energy because heat is the ultimate form of all energies. This is often measured to as calorie (cal) or joule (J), which is the amount of heat energy required to raise the temperature of 1 g of water by 1° C. Since this value is tiny amount of energy, physiologists commonly use kilocalorie (kcal) or kilojoule (kJ). One kilocalorie is the amount of energy required to raise the temperature of 1 kg of water through 1° C. Nutritionists, traditionally refer to kcal as the Calorie or Joule (always capitalised). The amount of heat liberated from complete combustion of 1 g food in a bomb calorimeter (a closed metal chamber filled with O<sub>2</sub>) is its gross calorific or gross energy value. The actual amount of energy combustion of 1 g of food is the physiologic value of food. Gross calorific values of carbohydrates, proteins and fats are 4.1 kcal/g, 5.65 kcal/g and 9.45 kcal/g, respectively, whereas their physiologic values are 4.0 kcal/g, 4.0 kcal/g and 9.0 kcal/g, respectively.

#### **Unit V: Chapter 16; 16.4 Pg. 266 after Indigestion**

#### **PEM**

Dietary deficiencies of proteins and total food calories are widespread in many underdeveloped countries of South and South-east Asia, South America, and West and Central Africa. **Protein-energy malnutrition (PEM)** may affect large sections of the population during drought, famine and political turmoil. This happened in Bangladesh during the liberation war and in Ethiopia during the severe drought in mid-eighties. PEM affects infants and children to produce Marasmus and Kwashiorkar.

Marasmus is produced by a simultaneous deficiency of proteins and calories. It is found in infants less than a year in age, if mother's milk is replaced too early by other foods which are poor in both proteins and caloric value. This often happens if the mother has second pregnancy or childbirth when the older infant is still too young. In Marasmus, protein deficiency impairs growth and replacement of tissue proteins; extreme emaciation of the body and thinning of limbs results, the skin becomes dry, thin and wrinkled. Growth rate and body weight decline considerably. Even growth and development of brain and mental faculties are impaired.

Kwashiorkar is produced by protein deficiency unaccompanied by calorie deficiency. It results from the replacement of mother's milk by a high calorie-low protein diet in a child more than one year in age. Like marasmus, kwashiorkor shows wasting of muscles, thinning of limbs, failure of growth and brain development. But unlike, marasmus, some fat is still left under the skin; moreover, extensive oedema and swelling of body parts are seen.

#### **Unit V: Chapter 18; 18.3.1 Pg. 284 (before 18.3.2 cardiac cycle)**

The blood flows strictly by a fixed route through **Blood Vessels**, the arteries and veins. Basically, each artery and veins consists of three layers: an inner lining of squamous endothelium, the **tunica intima**, a middle layer of smooth muscle and elastic fibres, the tunica media, and an external layer of fibrous connective tissue with collagen fibres, the **tunica externa**. The tunica media is comparatively thin in the veins (Figure 18.4).

**Unit V: Chapter 19; 19.8 Pg. 298 in 4<sup>th</sup> line**

During the process of hemodialysis, the blood drained from a convenient artery is pumped into a dialysing unit called **artificial kidney**.

**Unit V: Chapter 20; 20.1 Pg. 303 in the beginning of 2<sup>nd</sup> para**

You have studied in chapter 8 that the cilia and flagella are the outgrowths of the cell membrane. **Flagellar movement** helps in the swimming of spermatozoa, maintenance of water current in the canal system of sponges and in locomotion of Protozoans like *Euglena*.

**Unit V: Chapter 21; 21.2 Pg. 316 after parasympathetic neural system**

**Visceral nervous system** is the part of the peripheral nervous system that comprises the whole complex of nerves, fibers, ganglia, and plexuses by which impulses travel from the central nervous system to the viscera and from the viscera to the central nervous system.

**Unit V: Chapter 21; 21.6 Pg. 322 at the end**

**Sense Organs**

We smell things by our nose, taste by tongue, hear by ear and see objects by eyes.

The **nose** contains mucus-coated receptors which are specialized for receiving the sense of smell and called **olfactory receptors**. These are made up of olfactory epithelium that consists of three kinds of cells. The neurons of the olfactory epithelium extend from the outside environment directly into a pair of broad bean-sized organs, called **olfactory bulb**, which are extensions of the brain's limbic system.

Both nose and **tongue** detect dissolved chemicals. The chemical senses of gustation (taste) and olfactory (smell) are functionally similar and interrelated. The tongue detects tastes through **taste buds**, containing **gustatory receptors**. With each taste of food or sip of drink, the brain integrates the differential input from the taste buds and a complex flavour is perceived.

**Unit V: Chapter 22; 22.2.2 Pg. 333 along with 1<sup>st</sup> para after (ADH)**

An impairment affecting synthesis or release of ADH results in a diminished ability of the kidney to conserve water leading to water loss and dehydration, this disease is known as **Diabetes Insipidus**.

**Unit V: Chapter 22; 22.2.4 Pg. 333 at the end along with last line**

**Exophthalmic goitre** is a form of hyperthyroidism, characterized by enlargement of the thyroid gland, protrusion of the eyeballs, increased basal metabolic rate, and weight loss, also called **Graves' disease**.

**Unit V: Chapter 22; 22.2.7 Pg. 336 at the end of 1<sup>st</sup> para**

Underproduction of hormones by the adrenal cortex alters carbohydrate metabolism causing acute weakness and fatigue leading to a disease called **Addison's disease**.

**Unit V: Chapter 22; 22.2.2 Pg. 332 2<sup>nd</sup> para in 3<sup>rd</sup> line after dwarfism**

Excess secretion of growth hormone in adults especially in middle age can result in severe disfigurement (especially of the face) called Acromegaly, this may lead to serious complicating conditions, and premature death if unchecked. The disease is hard to diagnose in the early stages and is frequently missed for many years, until changes in external features, become noticeable.

## Class XII

### UNIT VI

#### Unit VI: Chapter 1; 1.1 - Page 6 at the end of 1<sup>st</sup> Para

Under unfavourable condition the *Amoeba* withdraws its pseudopodia and secretes a three-layered hard covering or cyst around itself. This phenomenon is termed as encystations. When favourable conditions return, the encysted *Amoeba* divides by multiple fission and produces many minute amoebae or pseudopodiospores; the cyst wall bursts out, and the spores are liberated in the surrounding medium to grow up into many amoebae. This phenomenon is known as **sporulation**.

#### Unit VI: Chapter 1; 1.1 - Page 7 at the end of 2<sup>nd</sup> Para

In some organism, if the body breaks into distinct pieces (fragments) each fragment grows into an adult capable of producing offspring (e.g., *Hydra*), this is also a mode of asexual reproduction called **fragmentation**.

#### Unit VII: Chapter 5; Pg. 85 (to be given as section 5.4)

##### Polygenic Inheritance

Mendel's studies mainly described those traits that have distinct alternate forms such as flower colour which are either purple or white. But if you look around you will find that there are many traits which are not so distinct in their occurrence and are spread across a gradient. For example in humans we don't just have tall or short people as two distinct alternatives but a whole range of possible heights. Such traits are generally controlled by three or more genes and are thus called as polygenic traits. Besides the involvement of multiple genes polygenic inheritance also takes into account the influence of environment. Human skin colour is another classic example for this. In a polygenic trait the phenotype reflects the contribution of each allele i.e the effect of each allele are additive. To understand this better let us assume that three genes A, B, C control skin colour in human with the dominant forms A, B and C responsible for dark skin colour and the recessive forms a, b and c for light skin colour. The genotype with all the dominant alleles (AABBCC) will have the darkest skin colour and that with all the recessive alleles (aabbcc) will have the lightest skin colour. As expected the genotype with three dominant alleles and three recessive alleles will have an intermediate skin colour. In this manner the number of each type of alleles in the genotype would determine the darkness or lightness of the skin in an individual.

#### Unit VII: Chapter 5; Pg. 85 (to be given as section 5.5)

##### Pleiotropy

We have so far seen the effect of a gene on a single phenotype or trait. There are however instances where a single gene can exhibit multiple phenotypic expression. Such a gene is called a pleiotropic gene. The underlying mechanism of pleiotropy in most cases is the effect of a gene on metabolic pathways which contributes towards different phenotypes. An example of this is the disease phenylketonuria, which occurs in humans. The disease is caused by mutation in the gene that codes for the enzyme phenyl alanine hydroxylase (single gene mutation). This manifests itself through phenotypic expression characterised by mental retardation and a reduction in hair and skin pigmentation.

### Unit VII: Chapter 5; 5.4 - Page 86 after 2nd Para

The sex determination in Honey bee is based on the number of sets of chromosomes an individual receives. An offspring formed from the union of a sperm and an egg develops as a female (queen or worker), and an unfertilized egg develops as a male (drone) by means of parthenogenesis. This means that the males have half the number of chromosomes than that of a female. The females are diploid having 32 chromosomes and males are haploid i.e. 16 chromosomes. This is called as haplodiploid sex-determination system and has special characteristic features such as the males produce sperms by mitosis (Figure 5.13), they do not have father and thus cannot have sons, but have a grandfather and can have grandsons.

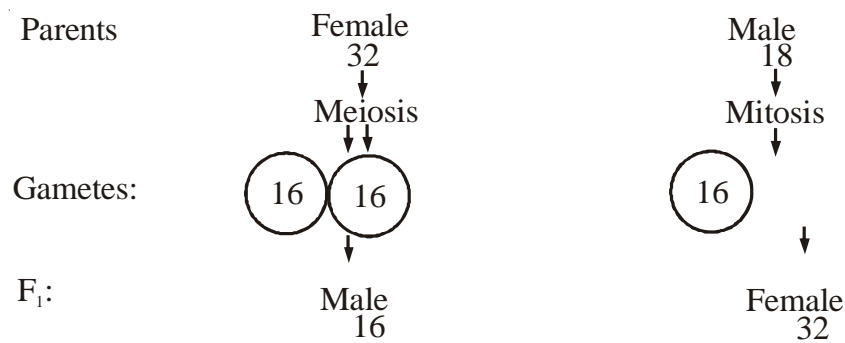


Fig.5.13. Sex Determination in honey bee.

### Unit VII: Chapter 5; 5.6.2 - Page 89 after 1<sup>st</sup> Para

**Colour Blindness:** It is a sex-linked recessive disorder due to defect in either red or / and green cone of eye resulting in failure to discriminate between red and green colour. This defect is due to mutation in certain genes present in the X chromosome. It occurs in about 8 per cent of males and only about 0.4 per cent of females. This is because the genes that lead to red–green colour blindness are on the X chromosome. Males have only one X chromosome and females have two. The son of a woman who carries the gene has a 50 per cent chance of being colour blind. The mother is not herself colour blind because the gene is recessive. That means that its effect is suppressed by her matching dominant normal gene. A daughter will not normally be colour blind, unless her mother is a carrier and her father is colour blind. Colour blindness is most commonly inherited from mutations on the X chromosomes.

### Unit VII: Chapter 5; 5.6.2 - Page 90 after 2<sup>nd</sup> Para

**Thalassemia:** This is also an autosome linked recessive blood disease transmitted from parents to the offspring when both the partners are unaffected carrier for the gene (or heterozygous). The defect could be due to either mutation or deletion which ultimately results in reduced rate of synthesis of one of the globins chains ( $\alpha$  and  $\beta$  chains) that make up haemoglobin. This causes the formation of abnormal haemoglobin molecules resulting into anaemia which is characteristic of the disease. Thalassemia can be classified according to which chain of the haemoglobin molecule is affected. In  $\alpha$  Thalassemia production of  $\alpha$  globin chain is affected while in  $\beta$  Thalassemia production of  $\beta$  globin chain is affected.  $\alpha$  Thalassemia is controlled by two closely linked genes HBA1 and HBA2 on chromosome 16 of each parent and it is observed due to mutation or deletion of one or more of the four genes. The more genes affected, the less alpha globin molecules produced. While  $\beta$  Thalassemia is controlled by a single gene HBB on chromosome 11 of each parent and occurs due to mutation of one or both the genes. Thalassemia differs from sickle-cell anaemia in that the former is a quantitative problem of synthesizing too few globin molecules while the latter is a qualitative problem of synthesizing an incorrectly functioning globin.

**Unit VII: Chapter 7; 7.3- Page 129 after 2<sup>nd</sup> Para**

Embryological support for evolution was also proposed by Ernst Haeckel based upon the observation of certain features during embryonic stage common to all vertebrates that are absent in adult. For example, the embryos of all vertebrates including human develop a row of vestigial gill slit just behind head but it is a functional organ only in fishes and not found in any other adult vertebrates. However, this proposal was disapproved on careful study performed by Von Baer, he noted that embryos never pass through the adult stages of other animals.

**Unit X: Chapter 13; 13.1-Page 221 at the end of 1<sup>st</sup> Para**

Each organism has an invariably defined range of conditions that it can tolerate, diversity in the resources it utilizes and a distinct functional role in the ecological system, all these together comprises its **niche**.

**Unit X: Chapter 15; 15.2.2- Page 266 in 3<sup>rd</sup> Para, 22<sup>nd</sup> line after the word threatened**

(organisms facing a very high risk of extinction in the wild in the near future)

**Deletions, Changes in the name of Chapter/Theme, Shifting of text matters**  
**Biology Text Book Class XI and XII**

**CLASS XI**

**To Delete**

Unit II: STRUCTURAL ORGANISATION IN ANIMALS AND PLANTS

Chapter 7 STRUCTURAL ORGANISATION IN ANIMALS

- To be Deleted 7.3 Earthworm from page 106 up to page 111 1<sup>st</sup> Para and 7.5 FROGS from page 116 up to page 120 1<sup>st</sup> Para

Unit III: CELL STRUCTURE AND FUNCTION

Chapter 9 BIOMOLECULES

- To be Deleted inhibition on page 158 2<sup>nd</sup> and 3<sup>rd</sup> Para

**To Change Chapter/Theme Title**

- Chapter title Photosynthesis in Higher Plants to be changed as Photosynthesis
- Chapter title Chemical coordination and integration to be changed as Chemical Coordination and Regulation
- Name of the Theme 16.4 on page 265 to be changed as Nutritional and Digestive Disorders

**To Shift**

- In Chapter 12 MINERAL NUTRITION, Theme 12.1 from page 194 up to page 195 1<sup>st</sup> Para will be deleted and shifted on page 200 just before Theme 12.6 and then Theme numbering will be accordingly rearranged.

**CLASS XII**

**To Change Chapter/Theme Title**

- Chapter title Principles of Inheritance and Variation to be changed as Heredity and Variation
- Chapter title Human health and disease to be changed as Health and disease
- Chapter title Organism and population to be changed as Organism and Environment
- Chapter title Biodiversity and Conservation to be changed as Biodiversity and its conservation

**To Shift**

Delete last Para from page 152 In Chapter 8 under Theme 8.2.4 and shift to page 212 In Chapter 12 under Theme 12.2 as Sub Theme **12.2.4 Vaccine production**

# **BIOLOGY**