Important snaps by Team PIS Class- X

SUBJECT : BIOLOGY

TEACHER : MS.MONIKA

Chapter 6 LIFE PROCESSES : NUTRITION

Q1.Differentiate between autotrophic and heterotrophic nutrition.

- **A.** Autotrophic Nutrition
- The organisms that are capable of preparing their own food using simple substances that are available in their surroundings.
- The conditions necessary for autotrophic nutrition are carbon dioxide, water, chlorophyll and water.
- Plants are an example for autotrophic nutrition.
- Autotrophs are the producers in the food chain

- Heterotrophic Nutrition
- The organisms which completely depend on others for their nutrition. They depend on surrounding plants and animals for food.
- They cannot make the food from available inorganic substances like carbon dioxide, water and sunlight.
- Animals and some plants are an example for heterotrophic nutrition.
- Heterotrophs are the consumers in the food chain

Chapter 6 LIFE PROCESSES : NUTRITION

- **Q2. Explain the process of digestion of carbohydrate , protein and fat.**
- **A.** Digestion of carbohydrates: Starch is digested in the mouth by salivary amylase. Other forms of carbohydrates are digested in the small intestine by enzyme amylase and converted into glucose.

Digestion of Protein : Partial digestion of protein takes place in the stomach by gastric enzyme pepsin. Further digestion of protein happens in the small intestine by the enzyme trypsin and is converted into amino acids.

Digestion of Fat : Fat is at first emulsified by bile and then its digestion happens in the small intestine by the enzyme lipase and is converted into fatty acid and glycerol.

Chapter 6 LIFE PROCESSES : RESPIRATION

- **Q1.Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?**
- **A.** Rate of breathing in aquatic organisms much faster than in terrestrial organisms because the availability of oxygen is less in water than on land, hence to obtain required oxygen aquatic organisms has to work hard.
- **Q2. Explain the three pathways of breakdown glucose in living organisms.**
- **A.** Glucose is first broken down to 3 carbon molecule called pyruvate. This process takes place in the cytoplasm of all organisms. Pyruvate is further broken down by the flowing steps.

In yeast: Pyruvate is broken down in the absence of oxygen and the process is called anaerobic respiration. In yeasts, pyruvate is broken down to produce CO2 and ethanol.

In Muscle Cells: During rigorous physical activity, the energy demand of our muscles cells increases rapidly. This is compensated by anaerobic respiration in muscle cells. In muscle cells, pyruvate is broken down into lactic acid.

In Mitochondria : In case of aerobic respiration(in presence of oxygen) pyruvate is broken down in mitochondria. Here Pyruvate is broken down to produce H2O and CO2. Aerobic respiration is most common in most of the organisms.

Chapter 6 LIFE PROCESSES : Transportation in Plants

- **Q1.What are the components of the transport system in highly organised plants ?**
- **A.** The components of transport system in highly organised plants are :

  a) Xylem : It helps in the transport of water and mineral salts obtained from soil ,upward.

  b) Phloem : It helps in the translocation of food synthesized in leaves to other parts of plants.

- **Q2. Explain the process of transport of water in plants mentioning the role of transpirational pull and root pressure.**
- **A.** Cells in the roots which are in contact with the soil take up ions which creates a difference of concentration between the roots and the soil and therefore water moves to the roots to eliminate the difference. Water is moved into xylem of roots and from where it is pushed upward. Plants use different mechanisms to pull water upwards through xylem like-

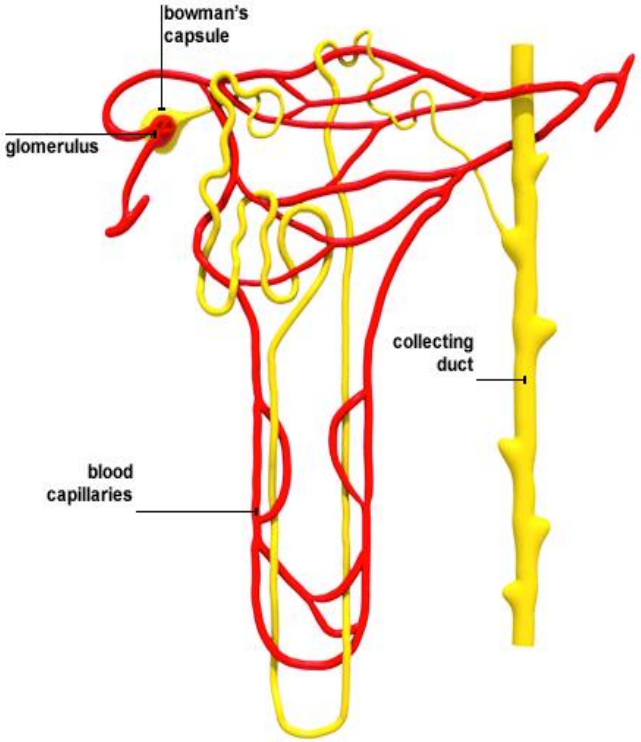
a) Transpirational pull : Transpiration creates a suction pull which helps in the absorption and upward movement of water from xylem cells of roots to the leaves.
b) Root pressure : The effect of root pressure in the transport of water is more important at night because the stomata are closed during the night hours. It helps to drive water upward into the xylem.

Chapter 6 LIFE PROCESSES : Transportation in Animals

- **Q1. Why do auricles have thin wall and ventricles have thick wall ?**
- **A.** Auricles have thin wall because they have to pump blood to the ventricles which are situated near by whereas ventricles have thick wall because they hane to pump blood to various body organs.
- **Q2. What is the advantage of four chambered heart ?**
- **A.** In four chambered heart left half is completely separated from right half by septa. This prevents oxygenated and deoxygenated blood from mixing. This allows a highly efficient supply of oxygenated blood to all parts of the body. This is useful in animals that have high energy needs such as birds and mammals.

Chapter 6 LIFE PROCESSES : EXCRETION

- **Q1. (a) Draw the structure of a nephron and label the following c**
  Glomerulus, Bowman's capsule, Renal artery, Collecting duct.
  A.



- **(b) What happens to glucose that enters the nephron along with filtrate?**

A. During excretion in human beings, glucose which enters the r
gets reabsorbed by blood capillaries surrounding the nephron.

Chapter 7 CONTROL AND COORDINATION : NERVOUS SYSTEM

- **Q1. What is synapse ? In a neuron cell how is an electrical impulse created and what is the role of synapse in this context ?**
- **A.** A synapse is the gap between the two neurons. Here the axon terminal of one neuron is in close proximity to the dendrite of the second neuron. When a nerve impulse reaches the knob like nerve ending of an axon, a tiny amount of a chemical substance is released in the synapse. This chemical substance is called as the neurotransmitter. At synapse the electrical signals converted into chemicals, that can easily cross over the gap and pass on to the next neurons where it again converted into electrical signals.
- **Q2.(a) How is brain protected from injury and shock?**
- **(b) Name two main parts of hind brain and state the functions of each.**
- **A.** (a) Brain is covered by a three layered membrane called meninges. In between the layers of meninges and brain, cavity fluid named Cerebro Spinal Fluid (CSF) is filled. The hard skull covers the meninges. Thus Meninges, CSF and Skull protects our brain for a certain extent. (b)
  Two main parts of hind-brain are — Medulla and Cerebellum. Their functions are:
- Medulla : Involuntary actions such as blood pressure, salivation and vomiting.
- Cerebellum : It is responsible for precision of voluntary actions and maintaining the posture and balance of the body.

Chapter 7 CONTROL AND COORDINATION : ENDOCRINE SYSTEM

- **Q1. State how concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light ?**
- **A.**When light falls on the side of the shoot auxin diffuses towards the shady side of the shoot. This concentration of the auxin stimulates the cell to grow longer on the side of the shoot which is away from light. Thus plant appears to bend towards light.
- **Q2. (i) Name the hormones that are released in human males and females when they reach puberty.**

  (ii) Name a gland associated with brain. Which problem is caused due to the deficiency of the hormone released by this gland ?
- A.(i) Testes in males produces hormone testosterone.

  Ovaries in females produces hormone oestrogen.

  (ii)Pituitary gland is associted with the brain. Growth hormone is released by pituitary gland.

  If excess - Gigantism

  If less - Dwarfism

Chapter 8 HOW DO ORGANISMS REPRODUCE

- **Q1. (i) What is fertilisation? Distinguish between external fertilisation and internal fertilisation.**

  (ii) What is the site of fertilisation in human beings?

- **A.** (i) Fertilisation is defined as the fusion of a male gamete (sperm) with a female gamete (an ovum or egg) to form a zygote during sexual reproduction.

External Fertilisation	Internal Fertilisation
(*i*) The fusion of male gamete (sperm) and female gamete (ovum) occurs outside the body.	(*i*) The fusion of gametes occurs inside the body.
(*ii*) Both individuals discharge their gametes outside the body.	(*ii*) Only the male discharges sperms into female genital tract.
(*iii*) Development occurs outside the body.	(*iii*) Development occurs inside the body.
(*iv*) **Example:** Frog.	(*iv*) **Examples:** Human, Birds, Cattle, etc.

- (ii) The site of fertilisation in human beings is in the fallopian tube of female reproductive system

Chapter 8 HOW DO ORGANISMS REPRODUCE

- **Q1. a) In the human body what is the role of (i) seminal vesicles, and (ii) prostate gland?**

  (b) List two functions performed by testis in human beings.

- **A.** (a) (i) Seminal vesicles produce seminal plasma which is in the form of fluid makes the transport of sperms smooth.

(ii) Prostate gland secretes a fluid that keeps the sperms alive and helps them to swim vigorously.

(b) Two functions performed by testis in human beings are as follows:

(i) Formation of sperms takes place in testis.

(ii) They secrete the hormone testosterone which regulates the formation of sperms and development of secondary sexual caracteristics in boys at the time of puberty.

Q2. Name the information source of making proteins in the cell. State two basic events in reproduction.

A. The DNA in the cell nucleus is the information source of making proteins.

The two basic events in reproduction are:

(i) Creation of a DNA copy,

(ii) Additional cellular apparatus by the cell involved in the process.

Chapter 9 HEREDITY AND EVOLUTION

- **Q1. State the meaning of inherited traits and acquired traits. Which of the two is not passed on to the next generation? Explain with the help of an example.**
- Answer. Inherited traits are the characteristics transmitted from parents to their offspring.Acquired traits are characteristics which are developed during the lifetime of an individual.Acquired traits are not passed on to the next generation. For example, if we breed a group of mice, all their progeny will have tails. Now, if the tails of these mice are removed by surgery and allowed to breed, the next generation mice will also have tails. If these tails are also removed and allowed to breed, the progeny of mice will again have tails. Removal of tail by surgery is an acquired trait and do not change the genes of germ cells and hence, are not passed on to the next generation.
- **Q2.The sex of the children is determined by what they inherit from their father and not their mother." Justify.**
- Answer. It is because a child who inherits an X chromosome from her father will be a girl and one who inherits a Y chromosome from his father will be a boy. But all children inherit a X chromosome from their mother regardless of whether they are boys or girls.

Chapter 9 HEREDITY AND EVOLUTION

- **Q1.Why is DNA copying necessary during reproduction?**
- **A.** DNA copying is necessary during reproduction as DNA carries genetic information. Therefore, for an organism to produce similar offsprings it is necessary to copy DNA.
- **Q2. What do you mean by dominant and recessive traits?**
- **A.** The trait that gets expressed in the offspring by taking over the other inherited trait is named as dominant trait.

The trait that remains hidden and is dominated by the dominant trait is named as recessive trait.

Chapter 9 HEREDITY AND EVOLUTION

- **Q1. How are fossils formed? Describe, in brief, two methods of determining the age of fossils.**
- **A. When organisms die, their bodies decompose due to action of micro organisms. However, sometime the body or at least some parts of the body may be in such an environment that does not let it decompose completely. All such preserved traces of living organisms are called fossils.**
- **The age of fossils can be estimated by the following two methods:**

- **If we dig into the earth and start finding fossils, it can be assumed that the fossils closer to the surface are more recent to those found in deeper layers.**
- **By detecting the ratios of different isotopes of the same element in the fossil material.**

Chapter 15 OUR ENVIRONMENT

- **Q1. Define 'trophic level'.What will happen if we kill all the organisms in one trophic level ?**
- **A. Trophic level is the position that an organism occupies in a food chain, where transfer of food or energy takes place.**

If we kill all the organisms in one trophic level, the following effects will take place:

1. The population of organisms in previous trophi'c level will increase.

2. The organisms in next trophic level will not be able to get the food, so they will migrate to some other ecosystem or die.

3. It will cause an ecological imbalance in the food chain.

Q2. Name the phenomenon in which non-biodegradable chemicals get accumulated progressively at each trophic level of a food chain.

A. Biological magnification

Chapter 15 OUR ENVIRONMENT

- **Q1. How is ozone formed in the upper atmosphere? Why is the damage of ozone layer a cause of concern to us? State a cause of this damage.**
- **A.** Ozone is formed in upper atmosphere by the reaction of ultraviolet (UV) radiations on oxygen molecule

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

$$O_2 + O \longrightarrow O_3$$

Ozone

The damage to ozone layer is a cause of concern to us as due to its damage, more ultraviolet rays reach the earth's surface causing various health hazards.

A cause of this damage is the presence of large amount of chlorofluorocarbons in the atmosphere.

Q2. Why is the flow of energy in the food chain unidirectional ?

A: There is dissipation of energy at every step of its transfer and transformation so that energy cannot flow back in the reverse direction. It flows from sun to plants, plants to animals, animals to animls, organic remains to decomposers and lost as heat at every stage.

Chapter 16 MANAGEMENT OF NATURAL RESOURCES

- **Q1. Who are the four stakeholders of forests ?**
- **A.** a) Local people
  b) Forest Department of the Government
  c) The Industrialist
  d) Wildlife and nature Enthusiasts

Q2. State two reasons each of conserving (a) forest and (b) wildlife.

A. Two reasons each of conserving:

(a) Fores : It helps in retaining the sub-soil water.
It checks flood.

(b) Wildlife: To maintain ecological equilibriumo protect the nature.
To protect the nature.

Chapter 16 MANAGEMENT OF NATURAL RESOURCES

- **Q1. State an instance where human intervention saved the forests from destruction.**
- **A.** Human intervention saved the Arabari forest range of West Bengal from destruction with active and willing participation of local community. The Sal forest of Arabari underwent a remarkable recovery.
- **What is a dam? Write two main advantages and two ill-effects of constructing a big dam.**
- A. Dams are massive barriers built across rivers and streams to confine and utilise the flow of water for human purposes such as irrigation and generation of electricity.

  Two main advantages of constructing a big dam are:

  Generation of electricity.

  Irrigation.

  Two ill-effects of constructing a big dam are:

  It displaces large number of people.

  It causes deforestation and loss of biodiversity.