9th Class 2020		
Biology	Group-II	Paper-I
Time: 1.45 Hours	(Subjective Type)	Marks: 48

(Part-I)

Q.2. Write short answers to any Five (5) questions: (10)

(i) Define unicellular organisms with example.

Ans In unicellular organisms, only one cell makes the life of an organism. All the life activities are carried out by the only cell. Amoeba, Paramecium, and Euglena are common examples.

(ii) Define bio-elements.

Ans Elements that make the body of living organisms are called bio-elements.

(iii) What are the causes of deforestation?

Ans Deforestation means cutting down of trees for the conversion of a forest to non-forest land.

Causes:

Sometime there is slow forest degradation and sometime sudden and catastrophic clear-cutting for urban development. Deforestation can be the result of deliberate removal of forests for wood, agriculture or urban development.

(iv) Which characteristics are base of five kingdom system?

Ans Five kingdom system is based on:

1. The levels of cellular organization, *i.e.*, prokaryotic, unicellular eukaryotic and multicellular eukaryotic.
2. The principal modes of nutrition, *i.e.*, photosynthesis, absorption, and ingestion.

(v) What are acellular particles?

Ans The particles which do not have cellula organization yet show some characters of livin organisms, are called acellular particles. For example they possess DNA.

(vi) Differentiate between chromosome and chromatin.

Ans Chromosomes are visible only during cell divisio while during interphase (non-dividing phase) of cell, the are in the form of fine thread-like structures known as chromatin.

(vii) What do you know about Indus Dolphin?

Ans According to WWF-P, only 600 animals of the species of Indus dolphin are left today in the Indus River. The population of this species declined due to water pollution, poaching, and destruction of habitat.

(viii) What do you mean by over-hunting?

Ans Over-hunting has been a significant cause of the extinction of hundreds of species and the endangerment of many more such as whales, ibex, urial, markhor (the national animal of Pakistan), etc. Commercial hunting, both legal and illegal, is the principal threat.

Q.3. Write short answers to any Five (5) questions: (10)

(i) How results are reported in biological method?

Ans Biologists publish their findings in scientific journals and books, in talks at national and international meetings and in seminars at colleges and universities. Publishing of results is an essential part of scientific method. It allows

other people to verify the results or apply the knowledge to solve other problems.

(ii) Define theory.

Ans The hypotheses that stand the test of time (often tested and never rejected), are called theories. A theory is supported by a great deal of evidence. Hardy-Weinberg law is an example of it.

(iii) Why welt appear when a mosquito bites?

Ans The welts that appear after the mosquito leaves, is not a reaction to the wound but an allergic reaction to the saliva.

(iv) What is difference between mitosis and meiosis?

Ans 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. On the other hand, meiosis is the process by which one diploid (2n) eukaryotic cell divides to generate four haploid (1 n) daughter cells.

(v) Write two advantages of apoptosis.

Ans Two advantages of apoptosis are:

1- Apoptosis removes the damaged cell, preventing it from getting further nutrients, or to prevent the spread of infections.

2- Apoptosis also gives advantages during development. For example, during formation of fingers, the cells between them undergo apoptosis and the digits separate.

(vi) What is scientific law? Give its an example.

Ans A scientific law is a uniform or constant fact of nature. It is an irrefutable theory. Hardy-Weinberg law is its an example.

(vii) Define reduction.

Ans The gain of electrons is called reduction.

(viii) What are photosystems?

Ans Photosynthetic pigments are organized in the form of clusters, called photosystems, in thylakoid membranes of chloroplasts.

Q.4. Write short answers to any Five (5) questions: (10)

(i) Define activation energy. How enzymes lower the activation energy?

Ans All chemical reactions require activation energy. It is defined as "minimum energy required to start a reaction". The need for activation energy acts as a barrier to the beginning of reaction. Enzymes lower such barriers by decreasing the requirement of activation energy. Thus, in the presence of enzymes, reactions proceed at a faster rate.

(ii) What is saturation of active site?

Ans When the active sites of all enzymes are occupied (at high substrate concentration), any more substrate molecules do not find free active sites. This state is called saturation of active sites.

(iii) Differentiate between substrates and products.

Ans The molecules at which enzymes act are called substrates, and enzyme converts them into different molecules, called products.

(iv) **Write four sources of protein.**

Ans Four sources of proteins are meat, eggs, grains, legumes, and dairy products such as milk and cheese.

(v) **What is protein energy malnutrition (PEM)? Write the names of its diseases.**

Ans Protein energy malnutrition means inadequate availability or absorption of energy and proteins in the body. It is the leading cause of death in children in developing countries. It may lead to diseases such as Kwashiorkor and marasmus.

(vi) **Write the name of four chambers of human's heart.**

Ans The names of human heart chambers are as follows:

1. Right atrium
2. Left atrium
3. Right ventricle
4. Left ventricle

(vii) **What are thrombocytes?**

Ans Thrombocytes (Platelets) are not cells, but are fragments of large cells of bone narrow, called megakaryocytes.

(viii) **Write the name of mosquito which transmits dengue fever and write any two symptoms of fever.**

Ans The name of mosquito which transmits dengue fever is Aedes.

Symptoms:

1. In dengue fever, there is a sharp decrease in the number of platelets in blood.
2. Patients bleed from the nose, gums and under the skin.

(Part-II)

Note: Attempt any TWO (2) questions.

Q.5.(a) Explain population level and community level with examples. (4)

Ans For Answer see Paper 2017 (Group-II), Q.5.(a).

(b) Define meristematic tissues and explain its types. (5)

Ans **Meristematic Tissues:**

These tissues are composed of cells, which have the ability to divide. The cells are thin walled, have large nucleus and small or no vacuoles. They do not have inter-cellular spaces among them. Two main types of meristematic tissues are recognized in plants.

(i) Apical meristems:

Apical meristems are located at the apices (tips) of roots and shoot. When they divide they cause increase in the length of plant. Such growth is called primary growth.

(ii) Lateral meristems:

Lateral meristems are located on the lateral sides of roots and shoot. By dividing, they are responsible for increase in growth of plant parts. This growth is called secondary growth. They are further of two types *i.e.*, vascular cambium (located between xylem and phloem) and cork cambium (in the outer lateral sides of plant).

Q.6.(a) Write a note on necrosis. (4)

Ans **Necrosis:**

Necrosis is the accidental death of cells and living tissues. Necrosis is less sequential than apoptosis. There are many causes of necrosis including injury, infection, cancer, etc. Necrosis may occur when a cell is given hypoxic (with less oxygen) environments.

During necrosis, there is a release of special enzymes from lysosomes. Lysosomal enzymes break cellular components and may also be released outside cell to break surrounding cells. Cells that die by necrosis may also release harmful chemicals that damage other cells.

(b) What is meant by ATP? Write its structure and functions in detail. (5)

Ans The major energy currency of all cells is a nucleotide called Adenosine Triphosphate (ATP). It is the main energy source for majority of the cellular functions like synthesis of macromolecules (DNA, RNA, and proteins), movement, transmission of nerve impulses, active transport, exocytosis and endocytosis etc.

Structure:

The ability of ATP to store and release energy is due to its molecular structure. A simplified diagram of ATP is as under. Each ATP molecule has three subunits: (a) adenine -- a double-ringed nitrogenous base; (b) a ribose -- a five-carbon sugar; and (c) three phosphate groups in a linear chain.

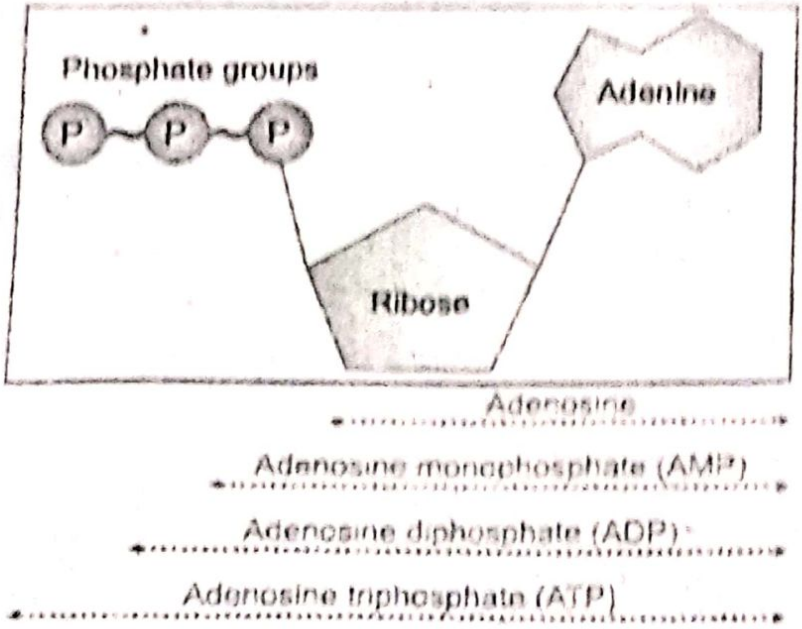

Fig. Molecular structure of ATP.

Functions:

The covalent bond connecting two phosphates is indicated by the "tilde" (~) and it is a high-energy bond. The energy in this bond is released as it breaks and inorganic phosphate (Pi) gets separated from ATP. The breaking of one phosphate bond releases about 7.3 kcal (7,300 calories) per mole of ATP as follows:

$$ATP + H_2O \rightarrow ADP + Pi + \text{energy (7.3 kcal/mole)}$$

In common energy reactions only the outermost of the two high-energy bonds breaks. When this happens, ATP become ADP (Adenosine Diphosphate) and one Pi is released. In some cases, ADP is further broken down to AMP (adenosine monophosphate) and Pi as follows:

$$ADP + H_2O \rightarrow AMP + Pi + \text{energy (7.3 kcal/mole)}$$

Cells constantly recycle ADP by recombining it with Pi to form ATP. The synthesis of ATP from ADP and Pi requires the expenditure of 7.3 kcal of energy per mole. This energy is obtained from the oxidation of foodstuff. So

we can summarize that ATP is generated by energy-releasing processes and is broken down by energy-consuming processes. In this way, ATP transfers energy between metabolic reactions.

Q.7.(a) Define famine. What are the major causes of famine? (4)

Ans Famine -- The Major Cause of Malnutrition:

Famine means the lack of enough food to feed all people living in an area. The most terrible famines of the twentieth century are the Ethiopian famine (1983-85) and the North Korean famine (1990s).

The major causes of famine are (i) unequal distribution of food, (ii) drought, (iii) flooding, and (iv) increasing population.

(i) Unequal distribution of food:

The achievements in science have enabled human beings to produce better food in terms of quality and quantity. Today the agricultural practices produce more than enough food that can be supplied to everyone on the Earth. But due to political and administrative problems, food is not equally distributed to different regions of the world. The result is that there is always surplus food in countries like America, UK, Canada, etc. and at the same time people have nothing to eat in countries like Ethiopia, Somalia, etc.

(ii) Drought:

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.

(iii) Flooding:

It occurs due to more than normal rainfall or due to weak water distribution system. Rivers and canals overflow their banks and destroy the soil quality of agricultural lands. It becomes impossible to grow crops immediately after flooding. In this way, flooding may be a reason for short-term famine.

(iv) Increasing population:

In spite of the global increase in food production, millions of human beings are undernourished. In the over-populated regions of world, large populations overuse natural resources to grow maximum food in order to meet the problems of food shortage. It leads to dry and infertile lands and depletion of resources. In such situations, crops can no longer be grown and famines result.

(b) What is myocardial infarction? Write down its causes, symptoms and treatment. (5)

Ans For Answer see Paper 2020 (Group-I), Q.7.(b).