

10th Class 2019

Biology	Group-II	Paper-II
Time: 15 Minutes	(Objective Type)	Max. Marks: 12

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink in the answer-book. Cutting or filling two or more circles will result in zero mark in that question.

- 1-1- The specific sequence of DNA nucleotides is copied in the form of messenger RNA nucleotides is known as:
- (a) Transcription ✓ (b) Translation
(c) Transduction (d) Translocation
- 2- The latest method of vegetative propagation is:
- (a) Budding (b) Cuttings
(c) Cloning ✓ (d) Bulbs
- 3- Which of the following drug is obtained from plants:
- (a) Aspirin (b) Morphine ✓
(c) Insulin (d) Cephalosporin
- 4- The World No Tobacco Day is observed every year on:
- (a) 31st March (b) 31st May ✓
(c) 31st July (d) 31st August
- 5- E-Coli bacterium was created for synthesizing human growth hormone in:
- (a) 1955 (b) 1967
(c) 1970 (d) 1977 ✓
- 6- The maintenance of internal body temperature is called:
- (a) Homeostasis (b) Osmoregulation
(c) Thermoregulation ✓ (d) Excretion

- 7- The base of food chain is always formed by:
(a) Animal (b) Ecosystem
(c) Plant (producer) ✓ (d) Food web
- 8- The inner layer of eye is sensory and is called as:
(a) Sclera (b) Cornea
(c) Choroid (d) Retina ✓
- 9- The largest part of forebrain is called:
(a) Cerebrum ✓ (b) Thalamus
(c) Hypothalamus (d) Cerebellum
- 10- A cluster of specialized cells which surrounds and nourishes, each egg cell is called:
(a) Fallopian tubes (b) Follicle ✓
(c) Uterus (d) Cervix
- 11- Which bone is part of appendicular skeleton:
(a) Pectoral girdle ✓ (b) Vertebral column
(c) Skull (d) Sternum
- 12- The specific combination of genes in an individual is known as:
(a) Phenotype (b) Karyotype
(c) Allele (d) Genotype ✓

10th Class 2019

	Group-II	Paper-II
Biology	(Subjective Type)	Max. Marks: 48
Time: 1.45 Hours		

(Part-I)

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

(i) What is the difference between breathing and cellular respiration?

Ans The term breathing is used for the process through which animals take air in their bodies to get oxygen from it and then give out the air for getting rid of carbon dioxide. Whereas cellular respiration is the process in which the C-H bonds in food are broken by oxidation-reduction reactions and the energy is transformed into ATP.

(ii) What is pneumonia? Write its symptoms.

Ans Pneumonia is an infection of lungs. If this infection affects both lungs then it is called double pneumonia. The most common cause of pneumonia is a bacterium, streptococcus pneumoniae.

Symptoms:

The symptoms of pneumonia include a cold that is followed by high fever, shivering, and a cough with sputum production. Patient may become short of breath. The patient's skin colour may change and become dusky. It is due to poor oxygenation of blood.

(iii) What is meant by lung cancer? Write its two causes.

Ans Lung cancer is a disease of uncontrolled cell divisions in the tissue of the lung. The cells continue to divide without any control and form tumors. The cellular growth may also invade adjacent tissues beyond the lungs.

Causes of Lung Cancer:

The main cause of any cancer include carcinogens (such as those in cigarette smoke), ionizing radiation and viral infection.

(iv) **What is called guttation?**

Ans ➤ If there is a high water content in soil, water enters the roots and is accumulated in xylem vessels. Some plants such as grasses force this water through special pores, present at leaf tips or edges, and form drops. The appearance of drops of water on the tips or edges of leaves is called guttation.

(v) **What is meant by lithotripsy?**

Ans ➤ Lithotripsy is method for the removal of kidney stones. In this method, non-electrical shock waves from outside are bombarded on the stones in the urinary system. Waves hit the dense stones and break them. Stones become sand-like and are passed through urine.

(vi) **What are two important functions of spinal cord?**

Ans ➤ Following are two important functions of spinal cord:

1. It serves as a link between body parts and brain. Spinal Cord transmits nerve impulses from body parts to brain.
2. Spinal cord also acts as a coordinator responsible for some simple reflexes.

(vii) **Differentiate between myopia and hypermetropia.**

Ans ➤ The condition in which a person is not able to see distant objects clearly is called myopia. It happens due to elongation of the eyeball and image is formed in front of the retina. Whereas the condition in which a person is not able to see near objects clearly is called hypermetropia. It happens when the eyeball shortens and image is formed behind the retina.

(viii) **What is paralysis? Write down its causes.**

Ans ➤ Paralysis is the complete loss of function by one or more muscle groups. It is most often caused by damage to the central nervous system (brain or spinal cord). The

damage may be due to stroke (rupture in a blood vessel of brain or spinal cord), blood clotting in these blood vessels, or poison produced by polio viruses.

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

(i) **Differentiate between movement and locomotion.**

Ans Movement is an act of changing place or position by entire body or by its parts. Whereas locomotion is the movement of an animal as a whole from one place to another.

(ii) **What is Skeleton? Write one merit.**

Ans Skeleton is defined as the framework of hard, articulated structures that provide physical support, attachment for skeletal muscles and protection for the bodies of animals.

One merit of skeleton is that it works very closely with the muscular system to help us move.

(iii) **Explain parthenogenesis with example.**

Ans Parthenogenesis is also considered as a form of asexual reproduction. In it, an unfertilized egg develops into new offspring. Some fishes, frogs and insects reproduce by means of parthenogenesis.

(iv) **Write down procedure of tissue culture.**

Ans The procedure of tissue culture is that tissues are taken from any part of plant and are put in a suitable nutrient medium. The tissue cells start mitosis and produce masses of cells called calluses are transferred to other medium that contains different hormones for the formation of roots, stem and leaves. Calluses make these structure and grow into new small plants. The small plants are then placed in pots and then in fields.

(v) **Differentiate between two methods of pollination.**

Ans Self-pollination and cross pollination are two methods of pollination. Difference between them is following:

Self-pollination is defined as the transfer of pollen grains from the anther to the stigma of the same flower or other flower of the same plant. Whereas cross pollination is the transfer of pollen grains from the flower on one plant to the flower on other plant of the same species. Cross pollination is brought about by various agencies like wind, water, bees, birds, bats and other animals including man.

(vi) **Differentiate between translation and transcription?**

Ans The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. The mRNA carries the sequence of its nucleotides to ribosome. The ribosome reads this sequence and joins specific amino acids, according to it, to form protein. This step is known as translation.

(vii) **What is difference between homozygous and heterozygous?**

Ans The genotype in which the gene pair contains two identical alleles (AA or aa), is called **homozygous** genotype.

The genotype in which the gene pair contains two different alleles (A a), is called **heterozygous** genotype.

(viii) **Write two important processes for organic evolution.**

Ans Following are two important processes for organic evolution:

1. Alteration in genetic characteristics (traits) of a type of organism overtime.
2. Creation of new types of organisms from a single type.

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

(i) **Define ecosystem.**

Ans The self-sufficient unit of an environment that is formed as a result of interactions between its biotic

community and the abiotic components is known as an ecosystem.

(ii) **What is deforestation? Give its two effects.**

Ans Deforestation means clearing of forests by natural causes or humans.

The two effects of deforestation include floods and drought.

(iii) **What are pollutants? Give two examples.**

Ans The substances that actually cause pollution are called the pollutants. Two examples of pollutants are industrial effluents and domestic wastes.

(iv) **How cheese is formed?**

Ans Cheese is formed when a milk protein is coagulated. This happens when the acid produced by lactic acid bacteria reacts with milk protein.

(v) **How human growth hormone was obtained before genetic engineering?**

Ans Before genetic engineering, human growth hormone was obtained by sheep brain. 5,00,000 sheep brains were required to produce 5mg human growth hormone.

(vi) **How terramycin developed?**

Ans Researchers of pharmaceutical company spent two years testing soil from all parts of the world to find new antibiotics. The project resulted in the development of one antibiotic, terramycin, which is used to treat many infections.

(vii) **How sedatives work?**

Ans Sedatives induce sedation by reducing irritability or excitement e.g., diazepam.

(viii) **Differentiate between bactericidal and bacteriostatic antibiotics.**

Ans Bactericidal are the antibiotics which work by killing bacteria, while the antibiotics that work by stopping bacteria multiplying are called bacteriostatic antibiotics.

(Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5.(a) Describe the two types of dialysis in detail. (4)

Ans Types of Dialysis

Dialysis means the cleaning of blood by artificial ways. Following are two types of dialysis:

1. Peritoneal Dialysis:

In this type of dialysis, the dialysis fluid is pumped for a time into the peritoneal cavity which is the space around gut. This cavity is lined by peritoneum. Peritoneum contains blood vessels. When we place dialysis fluid in peritoneal cavity, waste materials from peritoneal blood vessels diffuse into the dialysis fluid, which is then drained out. This type of dialysis can be performed at home, but must be done everyday.

2. Haemodialysis:

In haemodialysis, patient's blood is pumped through an apparatus called dialyzer. The dialyzer contains long tubes, the walls of which act as semi-permeable membranes. Blood flows through the tubes while the dialysis fluid flows around the tubes. Extra water and wastes move from blood into the dialysis fluid. The cleansed blood is then returned back to body. The haemodialysis treatments are typically given in dialysis centres three times per week.

(b) What is meant by neuron? Describe its types. (5)

Ans Nerve cell or neuron:

Nerve cell or neuron is the unit of the nervous system. The human nervous system consists of billions of neurons plus supporting cells. Neurons are specialized cells that are able to conduct nerve impulses from receptors to coordinators and from coordinators to effectors. In this way, they communicate with each other and with other types of body cells.

Types of neurons:

On the basis of their functions, neurons are of three types:

(i) Sensory neurons:

These neurons conduct sensory information from receptors towards the CNS. Sensory neurons have one dendrite and one axon.

(ii) Interneurons:

Interneurons form brain and spinal cord. They receive information, interpret them and stimulate motor neurons. They have many dendrites and axons.

(iii) Motor neurons:

Motor neurons carry information from interneurons to muscle or glands (effectors). They have many dendrites but only one axon.

Q.6.(a) Define joints and explain the types of joints with the help of examples. (4)

Ans For Answer see Paper 2017 (Group-I), Q.6.(a).

(b) State any five methods of natural vegetative propagation. (5)

Ans **Natural Vegetative Propagation:**

Vegetative propagation occurs naturally in several ways:

1. Bulbs are short underground stems surrounded by thick, fleshy leaves that contain stored food. Adventitious roots emerge under the base of bulb while shoots emerge from the top of the base. Tulips, onions and lilies reproduce by bulbs.
2. Corms are short and swollen underground stems containing stored food. Buds are present at the top of corm. From a bud, shoot grows and forms a new plant. Dasheen and garlic reproduce by corms.
3. Rhizomes are horizontal underground stems with scale leaves. There are enlarged portions called

nodes on rhizome. Buds are produced at nodes. The buds present on the upper surface of rhizome give rise to shoot. The lower surface of rhizome produces adventitious roots. Ginger, ferns and water lilies reproduce by rhizomes.

4. Stem tubers are the enlarged portions of an underground stem (rhizome). There are aggregations of tiny buds in the form of "eyes" along the surface of tuber. Each bud develops into shoot that grows upward and also produces roots. Potatoes and yams reproduce by tubers.
5. Suckers are lateral stems close to ground level. A sucker grows underground from some distance and then turns up, producing the new plant. Mint and Chrysanthemum reproduce in this way.

Q.7.(a) Explain producers and consumers with examples. (4)

Ans The biotic components comprise the living part (organisms) of the ecosystem. Biotic components are further classified as producers, consumers and decomposers.

The **producers** are the autotrophs present in an ecosystem. Producers include plants, algae and photosynthetic bacteria. These organisms are able to synthesize complex organic compounds (food) from inorganic raw materials. Producers form the basis of any ecosystem. In terrestrial ecosystems, plants are the main producers. In aquatic ecosystems, the main producers are the floating photosynthetic organisms (mainly algae) called phytoplankton and shallow water rooted plants.

The **consumers** are heterotrophs. They cannot synthesize their food and so depend upon producers for food. Consumers include all animals, fungi, protozoans and many of the bacteria. The animals are the major

where the seed is attached to ovary wall (fruit). At one end of hilum, there is micropyle. This is the same opening through which the pollen tube entered ovule. Seed uses it for the absorption of water.

Embryo is actually an immature plant. It consists of a radicle, a plumule and one or two cotyledons (seed leaves). The radicle of embryo develops into new root while the plumule develops into new shoot. The embryonic stem above the point of attachment of cotyledon(s) is called epicotyl. The embryonic stem below the point of attachment is hypocotyl. Within seed, there is a store of nutrients for the seedling that will grow from embryo. In angiosperms, the stored food is derived from the endosperm tissue. This tissue is rich in oil or starch and protein. In many seeds, the food of the endosperm is absorbed and stored by cotyledons.

Q.7.(a) Write a note on carbon cycle.

(4)

Ans Definition:

Carbon cycle is a perfect cycle in the sense that carbon is returned to atmosphere as soon as it is removed. Carbon atom is the principal building block of many kinds of biomolecules. Carbon is found as graphite and diamond in nature. It also occurs as carbon dioxide in atmosphere.

Sources of carbon:

Major source of carbon for the living world is carbon dioxide present in atmosphere and water. Fossil fuels like peat, coal, natural gas and petroleum also contain carbon. Carbonates of Earth's crust also give rise to carbon dioxide.

(i) Photosynthesis:

The major process that brings carbon from atmosphere or water into living world is photosynthesis. Producers take in carbon dioxide from atmosphere and convert it into organic compounds. In this way, carbon becomes a part of the body of producers. This carbon

to hairs forms 'Goosebumps'. It creates an insulating blanket of warm air.

Similarly, skin helps in providing cooling effect when sweat is produced by sweat glands and excess body heat escapes through evaporation. Metabolic wastes such as excess water, salts, urea and uric acid are also removed in sweat.

2. Lungs:

We have learned how lungs maintain the concentration of carbon dioxide in the blood. Our cells produce carbon dioxide when they perform cellular respiration. From cells, carbon dioxide diffuses into tissue fluid and from there into blood. Blood carries carbon dioxide to lungs from where it is removed in air.

(b) Write a note on forebrain.

(4)

Ans Forebrain:

It is the largest part of the brain. The important parts of forebrain are as follows:

(i) Thalamus:

It lies just below the cerebrum. It serves as a relay center between the various parts of the brain and the spinal cord. The thalamus is involved in pain perception and consciousness (sleep and awakening).

(ii) Hypothalamus:

It lies above the midbrain and just below the thalamus. Its size is roughly the size of an almond. Hypothalamus links the nervous system and endocrine system. It also controls the feelings such as pain, sorrow, pleasure, rage, etc.

(ii) Cerebrum:

It is the largest part of the forebrain. It controls the movement of skeletal muscles, thinking, intelligence and emotions.

(viii) What are nucleosomes?

Ans The structures formed by the wrapping of DNA around histone proteins is called nucleosomes.

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

(i) Define food chain and food web.

Ans Food chain:

A food chain is a series of organisms within an ecosystem, in which each organism feeds on the one before it and is fed by the one after it.

Food web:

A network of food chains which are interconnected at various trophic levels is called as food web.

(ii) What is meant by nitrogen fixation?

Ans The conversion of nitrogen gas into nitrates is called as nitrogen fixation.

(iii) What is genetic engineering?

Ans Genetic engineering is the artificial synthesis, modification, removal, addition and repair of the genetic material (DNA).

(iv) Write any two characteristics of transgenic animals.

Ans Following are two characteristics of transgenic animals:

1. Transgenic animals like goats, chicken, cows give more food and milk etc.
2. Many animals have been made transgenic to get medicines through their milk, blood or urine.

(v) How the microorganisms produce single cell protein?

Ans Single-Cell Protein (SCP) refers to the protein content extracted from pure or mixed cultures of algae, yeasts, fungi or bacteria. For the production of single-cell proteins, the microorganisms are grown in fermenters.

from outside are bombarded on the stones in the urinary system. Waves hit the dense stones and break them. Stones become sand-like and are passed through urine.

(vi) **Define co-ordinators with examples.**

Ans These are the organs that receive information from receptors and send messages to particular organs for proper action.

In nervous coordination, brain and spinal cord are coordinators.

(vii) **Differentiate between sensory and motor neurons.**

Ans Sensory nerves contain the axons of sensory neurons only. Motor nerves contain the axons of motor neurons only.

(viii) **What is nerve impulse?**

Ans A nerve impulse is a wave of electrochemical changes that travels along the length of neurons.

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

(i) **Differentiate between hyaline and fibrous cartilage.**

Ans Hyaline cartilage is strong yet flexible. It is found covering the ends of the long bones, in the nose, larynx, trachea and bronchial tubes. While fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form. It is found in intervertebral discs.

(ii) **How lower jaw is different in mammals from other lower vertebrates? Also give its advantage.**

Ans In lower vertebrates, the lower jaw is made up of more than one bone, while in mammals, it is made of single bone. During evolution, mammals modified the lower jaw bones and incorporated four of them into the middle ear. This adaptation proved beneficial for mammals.

(b) Posterior Lobe:

The posterior lobe of pituitary gland stores and secretes two hormones, *i.e.*, oxytocin and vasopressin. These hormones are produced by hypothalamus.

Vasopressin increases the rate of reabsorption of water from nephrons. When we have low amount of water in body fluids, pituitary gland secretes vasopressin and so more reabsorption of water occurs from nephrons into blood. In this way, body retains water and less amount of urine is produced. On the other hand, when body fluids have more than normal water, there is a decline in the secretion of this hormone. If pituitary gland does not secrete this hormone in the required amount, less water is reabsorbed from nephrons and there is excessive loss of water through urine. This condition is known as diabetes insipidus.

The hormone, oxytocin stimulates the contraction of uterus walls in mothers for childbirth. Moreover, this hormone is necessary for the ejection of milk from breast.

(b) What is arthritis? Describe its two types. (3)

Ans Arthritis:

Arthritis means "inflammations in joints". It is also very common in old age and in women. It is characterized by pain and stiffness in joints. The treatment of arthritis include pain killer and anti-inflammatory medicines. There are many types of arthritis, for example:

1. Osteo-Arthritis:

It is due to degeneration in the cartilage present at joints or due to decreased lubricant production at joints. In this arthritis, fusion of the bones at joint may occur and joints may become totally immoveable.

2. Rheumatoid Arthritis:

It involves the inflammation of the membranes at joints. Its symptoms include fatigue, low-grade fever, pain and stiffness in joints.

(ii) Compare exocrine glands and endocrine glands.

Ans Endocrine gland is a ductless gland; produces and secretes hormones while exocrine gland is a gland that discharges its secretion into a duct.

(iii) Define transcription and translation.

Ans The specific sequence of DNA nucleotides is copied in the form of messenger RNA (mRNA) nucleotides. This process is called transcription. The mRNA carries the sequence of its nucleotides to ribosome. The ribosome reads this sequence and joins specific amino acids, according to it, to form protein. This step is known as translation.

(iv) What is meant by nucleosomes?

Ans The structures formed by the wrapping of DNA around histone proteins is called nucleosomes.

(v) What is "Punnet Square"?

Ans The "Punnet Square" is a diagram that is used to predict an outcome of a particular cross or breeding experiment.

(vi) What is difference between analgesic and antibiotic?

Ans Analgesics are those medicines which reduce pain, e.g., aspirin, paracetamol, etc. While antibiotics are those medicines which inhibit or kill bacteria and treat bacterial infections, e.g., tetracycline, cephalosporine, etc.

(vii) What is meant by "Social Stigma"?

Ans "Social Stigma" is the extreme disapproval of a person or group on socially characteristic grounds that are perceived, and serve to distinguish them, from other members of a society.

(viii) What are Hallucinogens?

Ans Hallucinogens are the drugs that cause changes in perception, thought, emotion and consciousness.