

**BIOLOGY**  
**(Two hours and a quarter)**

*(The first 15 minutes of the examination are for reading the paper only. Candidate must NOT start writing during this time).*

---

*Answer all questions from Section A and four questions from Section B. All workings including rough work should be done on the same sheet as and adjacent to the rest of the answer. The intended marks for questions are given in brackets [ ]*

---

**Section A (40 marks)**

**Question 1**

- (a) Read the following questions carefully. For each question there are four alternatives A,B,C,D. Choose the correct alternative and write it in your answer sheet. [15].
- (i). Branch of science that deals with study of tissues in plants and animals is.  
A. Genetics      B. Ecology      C. Histology      D. Cytology.
- (ii). The ultimate end parts of the respiratory system in humans are  
A. Alveoli      B. Bronchioles      C. Bronchi      D. Tracheoles.
- (iii). The dental formula of an adult human is  
A. 2120/2120      B. 2123/2123      C. 2012/2012      D. 2122/2122.
- (iv). The factories of protein synthesis are  
A. Lysosomes      B. Endoplasmic reticulum.      C. Ribosomes      D. Mitochondria.
- (v). The longest cell in the body is  
A. Red blood cell      B. White blood cell      C. Nephron      D. Nephron
- (vi). Maximum transpiration happens in a plant through  
A. Cuticle      B. Stomata      C. Lenticel      D. Stomata
- (vii). Instrument used to measure the rate of transpiration in plants is  
A. Auxanometer      B. Ganong's Potometer      C. Manometer      D. Photometer.
- (viii). A hormone produced at the dominant growing tips of root and stem is  
A. Cytokinin      B. Gibberellin      C. Ethylene      D. Auxin
- (ix). Largest part of the human brain is  
A. Cerebellum      B. Cerebrum      C. Medulla Oblongata      D, Pons
- (x). Loss of water droplets through small openings in the margins of leaves is called  
A. Guttation      B. Bleeding      C. Transpiration      D. Respiration.
- (xi). An example of a mixed gland is  
A. Adrenal gland      B. Pancreas      C. Thyroid gland      D. Pituitary gland
- (xii). The continued compulsive use of addictive substance despite adverse health or social consequences is  
A. Substance abuse      B. Drug abuse      C. Drug addict      E. Medication
-

- (xiii). The principal grinders and crushers of food of food are the  
 A. Incisors                      B.Canines                      C.Premolars                      D.Molars
- (xiv). The enzyme Ptyalin/Salivary amylase produced in saliva helps to break down  
 A. Starch/Carbohydrates                      B. Proteins                      C.Fats                      D.Vitamins
- (xv). Type of plastid that helps to trap solar energy for photosynthesis is  
 A. Leucoplastid                      B. Chromoplastid                      C. Chloroplastid                      D. Heteroplastid.

(b) *Fill in the blanks by choosing appropriate words from the bracket* [5]

- (i) Membrane around the vacuole is called.....(cell wall, cell membrane, tonoplast)
- (ii) The left atrioventricular valve is called.....(bicuspid valve, tricuspid valve, semilunar valve)
- (iii) Covering of heart is called .....(Pericardium. Pleura, Meninges)
- (iv) Correct term used for single cell organism is.....(Mono cellular, Unicellular, Acellular)
- (v) Voice box is the common term used for.....(Pharynx.Larynx,Trachea)
- (vi) Study of human mind is .....(Psychology, Ecology, Physiology)
- (vii) Transmission across a synapse is dependent on the release of .....(Neurotransmission. Neurons. Proteins)
- (viii) SA Node /pacemaker is located in the wall of.....(right auricle, left auricle, right ventricle)
- (ix) When a person gradually needs a larger dose of a drug to get the same effects ,it is referred to as.....(Relapsing, withdrawal, Addiction)
- (x) When a person is drunk, the part of his brain affected is.....(Cerebrum, cerebellum, medulla oblongata)

(c) *State TRUE and FALSE. If false rewrite the false statements in the correct form only by changing the words printed in bold.* [6×0.5=3]

- (i) **TRANSPIRATION** takes place only in green plants.
- (ii) **PLASMA MEMBRANE** is selectively permeable.
- (iii) Exhalation and inhalation of air is known as **CELLULAR RESPIRATION**
- (iv) **NEURONS** in the brain and spinal cord cannot regenerate once damaged.
- (v) The wall of guard cell of a stomata towards the stoma is **THIN**.
- (vi) Leaves are reduced to spines in **XEROPHYTIC** plants.

(d) *.Match the items under Col, A with the most appropriate items under Col. B. Rewrite the correct matching pairs..* [4]

**COLUMN A**

- I) Ptyalin  
 II) Larynx  
 III) Peristalsis  
 IV) Valve  
 V) Neuron  
 VI) Alveoli  
 VII) Aorta  
 VIII) Cocaine

**COLUMN B**

- a) Swallowing  
 b) Vein  
 c) Artery  
 d) Salivary amylase  
 e) Adam's apple  
 f) Structural and functional unit of Nervous system  
 g) Structural and functional unit of Lungs.  
 h) Drug  
 i) Pepsin.

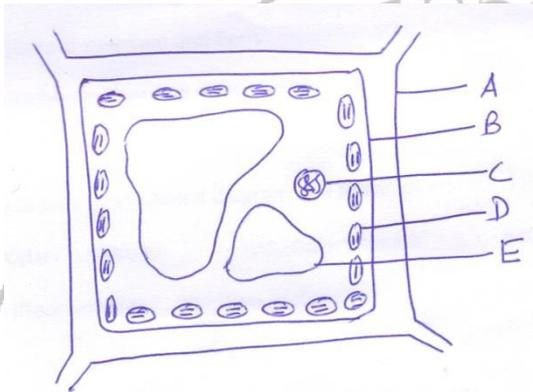
(e) *Give reason for the following: [Any five]* [5]

- (i) .A high rate of photosynthesis is seen on a windy day than a calm day.

- (ii) Yoga is related to blood circulation
- (iii) People living on high altitude Areas have more number of red blood cells.
- (iv) Study of Biology can help us save our environment.
- (v) Robert Hooke discovered cell wall but not cell organelles.
- (vi) Lysosome is called suicide bag of the cell.
- (vii) The cell of an elephant will not be larger than cells of an ant.
- (viii) More energy is produced during aerobic respiration than anaerobic respiration.
- (ix) Arteries are deeply seated in the body.

(f) Observe the given cell and answer the following questions.

[2.5+2.5]



- a) Label the parts A to F      b) Is it a plant cell or an animal cell.

### Section B [60 marks]

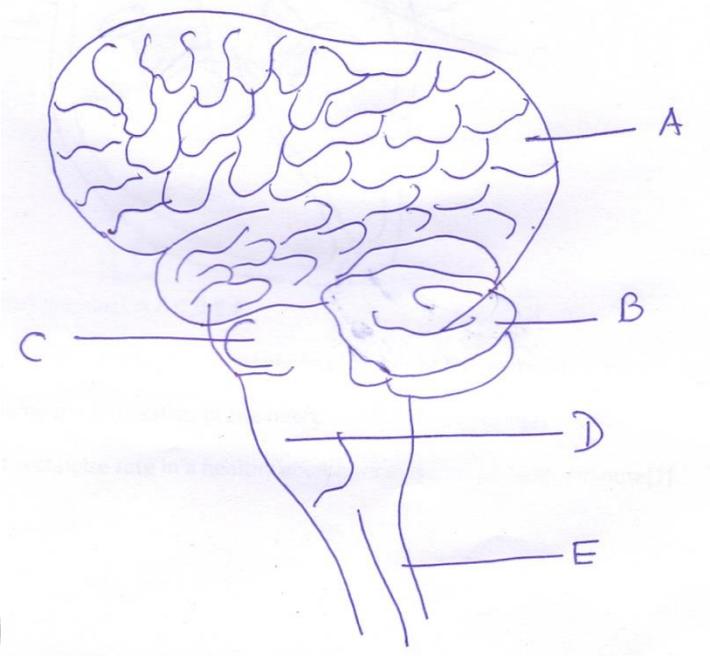
Attempt any six questions from this section. Each question carries 10 marks.

#### Question 2.

- a). Write one difference between [any 4] [4]
- (i) Active transport and Passive transport
  - (ii) Stomata and cuticle.
  - (iii) Cell wall and cell membrane
  - (iv) Ingestion and digestion
  - (v) Systole and diastole
  - (vi) Erythrocytes and leucocytes
  - (vii) Systemic circulation and pulmonary circulation.
  - (viii) Anaerobic respiration in plants and anaerobic respiration in animals.
  - (ix) Corpus callosum and Pons
  - (x) White matter and grey matter
- b). Draw a neat labeled diagram of a NEURON and label the following parts. [2+3]
- (i). Cyton
  - (ii). Axon
  - (iii). Medullary sheath
  - (iv). Dendrites
  - (v). Node of Ranvier
  - (vi). Neurilemma.
- c). Write two limitations of Ganong's Potometer. [2]

**Question 3.**

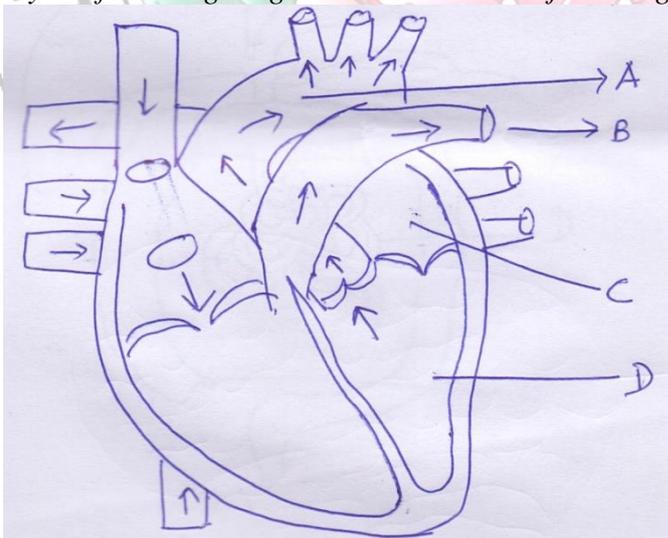
a). Study the following diagram and answer the following questions



- (i) Label A,B,C,D,E [2]
- (ii) Write the function of each part labelled [2]
- (iii) How is the central nervous system protected? [2]
- b). Write 3 significance of Transpiration. [1.5]
- c). Write 3 benefits of the process of Photosynthesis. [1.5]
- d). Define Synapse [1]

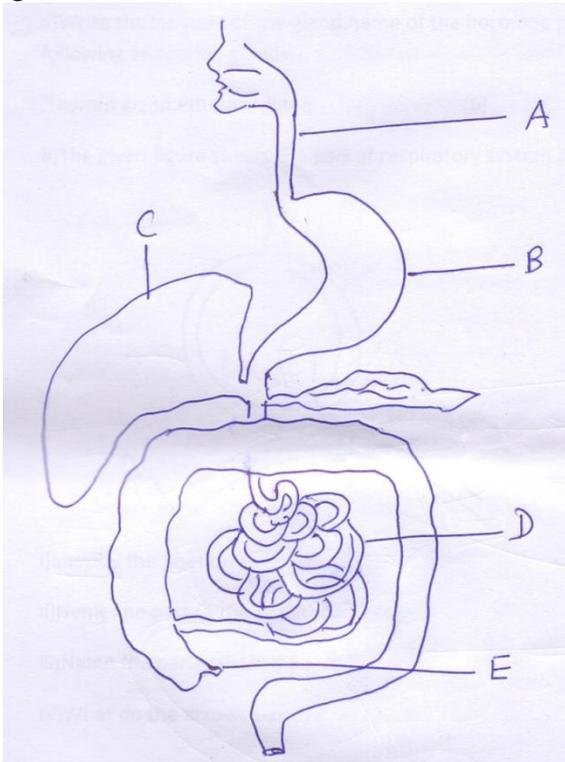
**Question 4**

- a). Write 4 differences between plant and animal cell. [2]
- b). Study the following diagram and answer the following questions



- (i) Label the parts A,B,C,D,E,F [2]
- (ii) Name the receiving and supplying chamber of the heart. [1]
- (iii) Name the four valves of the heart. [2]
- (iv) At rest, pulse rate in a healthy adult human is.....beats /minute [1]
- c). Write the reactions for aerobic respiration and anaerobic respiration in plants and animals. [2]

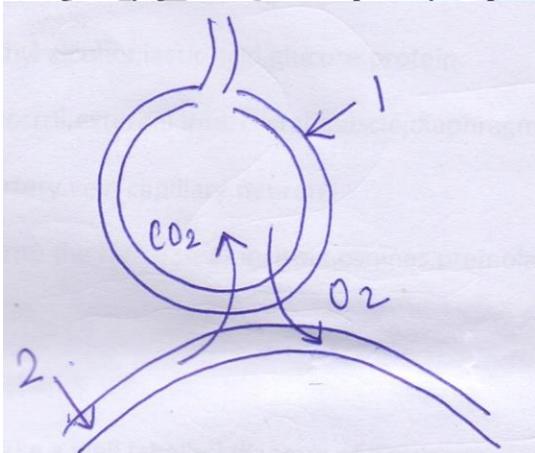
**Question 5**



- Label A,B,C,D,E [2]
- Write the function of part labelled B and C. [1]
- What happens if part labelled C is damaged. [1]
- Construct a flow chart from mouth through different alimentary parts to anus. [2]
- Write four functions of circulatory system. [2]
- Write any two points of cell theory. [2]

**Question 6**

- Write the location of the gland, name of ANY ONE hormone produced, role in body and disorder caused by hypo secretion and hypersecretion of the particular hormone for the following endocrine glands:  
Thyroid gland, Pituitary gland, [6]
- The given figure shows the part of respiratory system. Answer the question: [4]



- Identify the phenomenon
- Name the part of the respiratory organ
- Name the parts labelled 1 and 2
- What do the arrows signify?

**Question 7**

- a). *Fill in the blanks with the correct form of word(s)* [8×0.5 = 4]
- (i) Small intestine is for .....
  - (ii) Alveoli is for exchange .....
  - (iii) Pleural membrane is for .....
  - (iv) Respiratory centre .....
  - (v) Pericardial fluid is for .....
  - (vi) Meninges is for .....
  - (vii) Cerebrospinal fluid is for .....
  - (viii) Chloroplast in a plant cell is for.....

b). *Choose the ODD one in each case.* [4]

- (i) Nostril, trachea, oesophagus, alveolus
- (ii) Ethyl alcohol, lactic acid, glucose, protein.
- (iii) Nostril, external intercostal muscle, diaphragm, lungs
- (iv) Artery, Vein capillary, neuron

c). *Write the function of incisors, canines, premolars and molars* [2]

**Question 8**

- a). Make a well labelled diagram of a stomata [4]
- b). Define photosynthesis and write a well balanced equation for the same. [2]
- c). Write two differences between light and dark reaction of photosynthesis [2]
- d). Write about two kinds of effects that drug abuse can have on other people. [2]

**Question 9**

- a). Name a heterocrine gland. [1]
- b). Write 4 differences between artery and vein. [2]
- c). write a note on double circulation with a diagram [3]
- d). Write a note on the role of ribs, diaphragm, intercostals muscles and thoracic cavity in the process of inhalation and exhalation. [4]