ICSE 2026 EXAMINATION
Sample Question Paper - 3
Biology

Time Allowed: 2 hours **Maximum Marks: 80**

General Instructions:

- Answers to this Paper must be written on the paper provided separately.
- You will not be allowed to write during first 15 minutes. This time is to be spent in reading the question paper.
- The time given at the head of this Paper is the time allowed for writing the answers.
- Section A is compulsory.
- Attempt any four questions from Section B.
- The intended marks for questions or parts of questions are given in brackets [ ].

Section A

1. **Question 1: Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answers only.)** **[15]**

(a) The process of guttation takes place **[1]**

a. when the root pressure is high and the rate of transpiration is low
b. when the root pressure is low and the rate of transpiration is high
c. when the root pressure equals the rate of transpiration
d. when the root pressure as well as rate of transpiration are high

a) Option (c) b) Option (a)
c) Option (b) d) Option (d)

(b) Cells which are not dividing are likely to be at: **[1]**

a) G_1 b) G_o
c) S phase d) G_2

(c) Choose the correct answer from the four options given below: **[1]**

a) receptor cell, sensory neuron, relaying neuron, effector muscles.
b) receptor cell, synapse, motor neuron, relaying neuron.
c) receptor cell, spinal cord, motor neuron, relaying neuron.
d) receptor cell, effector nerve, relaying neuron, muscles of the body.

(d) Nuisance growth of aquatic plants and bloom-forming algae in natural water is generally due to high concentrations of **[1]**

a) phosphorus b) calcium
c) carbon d) sulphur

(e) Blood is a **[1]**

a) liquid connective tissue
b) mobile connective tissue
c) Both mobile connective tissue and liquid connective tissue
d) semi-solid connective tissue

(f) **Assertion (A):** Arctic's ozone depletion tends to be milder and short lived than the Antarctic's. **[1]**
Reason (R): CFCs, Frigid temperatures and sunlight are not present at the Arctic at the same time.

a) Both A and R are true and R is the correct explanation of A.
b) Both A and R are true but R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

(g) Surgical method of sterilization in a woman involves cutting and tying of: **[1]**

a) Ureter
b) Uterus
c) Oviduct
d) Urethra

(h) Which substance is present at a lower concentration in the renal artery than in the renal vein? **[1]**

a) Glucose
b) Urea
c) Carbon dioxide
d) Amino acids

(i) Among the following given options, which one should not act as a limiting factor for photosynthesis? **[1]**

a) Chlorophyll
b) Oxygen
c) CO_2
d) Light

(j) Fertilisation is the process of fusion of male gamete and the female gamete to produce a/an: **[1]**

a) zygote
b) embryo
c) child
d) infant

(k) A chromosome when present in condensed form, consists of **[1]**

a) five chromatids
b) one chromatid
c) two chromatids
d) four chromatids

(l) Select and rewrite the correct answer to the given statement from the four choices given below. **[1]**
Insulin is secreted by

a) delta cells of pancreas
b) alpha cells of pancreas
c) Gama cells of pancreas
d) beta cells of pancreas

(m) Which one of the following is a greenhouse gas? **[1]**

a) Methane
b) Sulphur dioxide
c) Oxygen
d) Nitrogen

(n) The individual flattened stacks of membranous structures inside the chloroplast are known as:- **[1]**

a) Cristae
b) Thylakoids
c) Stroma
d) Grana

(o) Aqueous humour is present between the **[1]**

a) Lens and Retina
b) Cornea and Iris
c) Iris and Lens
d) Cornea and Lens

2. **Question 2** **[25]**

(a) **Name the following:**

i. The force that forms continuous water column in the xylem. **[1]**

ii. The exudation of sap from injured parts of a plant. **[1]**

iii. The waxy layer on the epidermis of the leaf meant to reduce transpiration. **[1]**

iv. The hormone responsible for water exchange in the renal tubules. **[1]**

v. Group of hormones which influence other endocrine glands to produce hormones. **[1]**

(b) **Arrange and rewrite the terms in each group in the correct order so as to be in a logical sequence beginning with the term that is underlined.**

i. The statement given below is incorrect. Rewrite the correct statement by changing the underlined words of the statement. **[1]**

The Graafian follicle, after ovulation turns into a hormone producing tissue called <u>corpus callosum</u>.

ii. Correct the following statement by changing the underlined word: **[1]**

The outermost layer of meninges is <u>Pia mater.</u>

iii. Osmosis is <u>active</u> transport of molecules in cells. **[1]**

iv. <u>Xylem</u> transports starch from the leaves to all parts of the plant body. **[1]**

v. Cytoplasm : Cytokinesis : : Nucleus : _____ **[1]**

(c) **Fill in the blanks with suitable words:**

i. Copy and complete the following by filling in the blanks 1 to 5 with appropriate words. **[5]**

The human female gonads are ovaries. A maturing egg in the ovary is present in a sac of cells called (i)_____. As the egg grows larger, the follicle enlarges and gets filled with a fluid and is now called the (ii)_____ follicle. The process of releasing the egg from the ovary is called (iii)_____. The ovum is picked up by the oviduct funnel and fertilization takes place in the (iv)_____. In about a week the blastocyst gets fixed in the endometrium of the uterus and this process is called (v)_____.

(d) **Choose the odd one out from the following terms and name the category to which the others belong:**

i. Bile, Urea, Uric acid, Ammonia **[1]**

ii. Exophthalmic Goiter, Simple Goitre, Cretinism, Myxoedema **[1]**

iii. Addison's disease, Cushing's Syndrome, Acromegaly, Leukemia. **[1]**

iv. Syringes, Soiled dressings, Discarded needles, Household detergents: **[1]**

v. Polythene bag, Crop residue, Animal waste, Decaying vegetable. **[1]**

(e) **Match the items given in Column I with the most appropriate ones in Column II and rewrite the correct matching pairs.**

i. Match the following columns. **[5]**

Column I	Column II
(a) Liver	(i) Knot-like tuft of blood capillaries in Bowman’s capsule.
(b) Skin	(ii) Breakdown of proteins.

(c) Kidney	(iii) Sweat glands.
(d) Glomerulus	(iv) Bean-shaped excretory organ.

Section B

Attempt any 4 questions

3. **Question 3** **[10]**

(a) Give the dihybrid ratio. Name and state the law which explains the same. **[1]**

(b) How many alleles of genes for X-linked traits are present in female and male individuals, respectively? **[2]**

(c) Name a cell that is found arrested in diplotene stage for months and years. Comment in 2-3 lines how it completes cell cycle? **[2]**

(d) Briefly explain the sex-linked inheritance. **[2]**

(e) Draw a well labelled diagram to show the anaphase stage of mitosis in an animal cell having four chromosomes. **[3]**

4. **Question 4** **[10]**

(a) State the main function of the medulla oblongata. **[1]**

(b) Write short notes on the following. **[2]**

i. Cochlea

ii. Organ of Corti

(c) Compare the Central Neural System (CNS) and Peripheral Neural System (PNS). **[2]**

(d) In what way sulci are different from gyri? **[2]**

(e) Briefly explain the following terms. **[3]**

i. Reflex action

ii. Power of accommodation

iii. Synapse

5. **Question 5** **[10]**

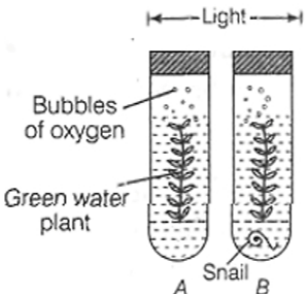
(a) State the role of chlorophyll. **[1]**

(b) What conditions enable RuBisCO to function as an oxygenase? Explain the ensuring process. **[2]**

(c) Plants have several pigments that can catch light energy. Two of these are chlorophyll-a and chlorophyll-b, which harness light of different wavelengths. What advantage does a plant obtain by having molecules that act at different wavelengths? **[2]**

(d) Name the end products of light reaction of photosynthesis. Mention the fate of each of them. **[2]**

(e) The diagram below shows two test tubes A and B. Test tube A contains a green water plant. Test tube B contains both a green water plant and a snail. Both Test tubes are kept in sunlight. Answer the questions that follow: **[3]**



a. Name the physiological process that releases the bubbles of oxygen.

b. Give an example of a water plant that can be used in the above experiment.

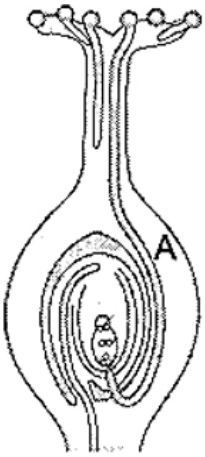
c. Write the overall chemical equation for the above process.

6. **Question 6** **[10]**

(a) During which phase in cell cycle, proteins and RNA are synthesised for distribution to the daughter cells? **[1]**

(b) Describe cell division. List various types of cell division. Also mention about the need of cell division? **[2]**

(c) The diagram given below represents a plant movement. **[3]**



a. Explain the tropic movement mentioned in (a).

b. Name the tropic movement shown in the diagram.

c. Label the part marked **A.**

7. **Question 7** **[10]**

(a) Mention the two key concepts of Darwinism. **[1]**

(b) Explain Darwin's concept of natural selection. **[2]**

(c) Name the ancestors of man based on the features given below **[2]**

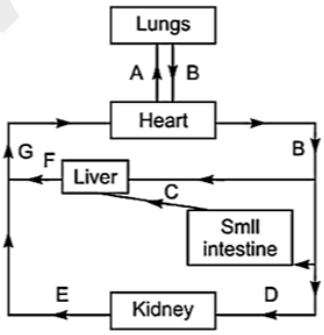
i. Human-like meat eater with 900 cc brain, lived in Java.

ii. More human with brain size 1400 cc, lived in Central Asia, used hides and buried their dead.

iii. Human-like, vegetarian, with brain capacity between 650 cc and 800 cc.

(d) Some great authors has said that a population explosion is far more dangerous than an atomic explosion. Justify this statement. **[2]**

(e) The diagram along side represents the circulation of the human body. Answer the questions that follows: **[3]**



a. Name the blood vessels labelled A, C, F and G.

b. Name the blood vessel that supplies the walls of the heart with oxygen.

c. Mention one structural difference between blood vessels numbered D and E.

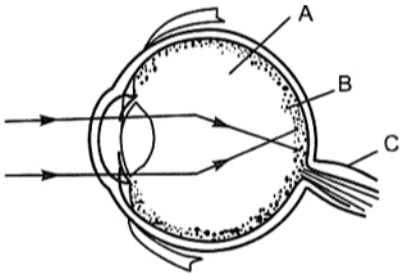
8. **Question 8** **[10]**

(a) Explain the term root pressure. **[1]**

(b) What is the importance of plasma proteins? **[2]**

(c) A village is located near a bank of river. There an industrial setup started in village near river. After the industrial setup, the health of people becomes low. Why? Please explain. **[2]**

(d) Given below is a diagram depicting a defect of the human eye. Study the same and then answer the questions that follow **[3]**



a. Identify the defect.

b. Name the parts labelled A, B and C.

c. Give two possible reasons for this eye defect.

Solution

Section A

1. Question 1: Choose the correct answers to the questions from the given options. (Do not copy the question, write the correct answers only.)

(i) **(b)** Option (a)
Explanation:
when the root pressure is high and the rate of transpiration is low

(ii) **(b)** G_o
Explanation:
G_o phase or quiescent stage. It occurs due to the non-availability of nitrogen and energy-rich compounds.

(iii) **(a)** receptor cell, sensory neuron, relaying neuron, effector muscles.
Explanation:
receptor cell, sensory neuron, relaying neuron, effector muscles.

(iv) **(a)** phosphorus
Explanation:
phosphorus

(v) **(c)** Both mobile connective tissue and liquid connective tissue
Explanation:
Both mobile connective tissue and liquid connective tissue

(vi) **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
It is necessary to have all three at the same time for ozone layer to deplete. Thus both assertion and reason are true and reason is the correct explanation of the assertion.

(vii) **(c)** Oviduct
Explanation:
The surgical procedure is tubal ligation, in which the oviduct (fallopian tube) is cut or sealed.

(viii) **(c)** Carbon dioxide
Explanation:
Carbon dioxide

(ix) **(b)** Oxygen
Explanation:
Oxygen

(x) **(a)** zygote
Explanation:
zygote form by fusion of male and female gamete.

(xi) **(c)** two chromatids
Explanation:
two chromatids

(xii) **(d)** beta cells of pancreas
Explanation:
Insulin is secreted by beta cells of pancreas.

(xiii) **(a)** Methane
Explanation:
Methane

(xiv) **(d)** Grana

Explanation:

Grana

(xv) **(d)** Cornea and Lens

Explanation:

Aqueous humour is the liquid that is present between **eye lens and cornea**.

2. Question 2

(i) Name the following:

i. 1. Cohesion

ii. 1. Bleeding

iii. 1. Cuticle

iv. 1. ADH
2. Vasopressin

v. 1. Tropic hormones
2. Tropic

(ii) Arrange and rewrite the terms in each group in the correct order so as to be in a logical sequence beginning with the term that is underlined.

i. The Graafian follicle, after ovulation turns into a hormone producing tissue called Corpus luteum.

ii. The outermost layer of Meninges is dura mater.

iii. Osmosis is passive transport of molecules in cells.

iv. Phloem transports starch from the leaves to all parts of the plant body.

v. Karyokinesis

(iii) Fill in the blanks with suitable words:

i. (i) follicle, (ii) graafian, (iii) ovulation, (iv) fallopian tube/oviduct/uterine tube, (v) implantation

(iv) Choose the odd one out from the following terms and name the category to which the others belong:

i. **Odd term:** Bile
Category: Nitrogenous wastes/Excretory substances

ii. **Odd term:** Exophthalmic Goiter
Category: Hypothyroidism: Under secretion of thyroxine causes these diseases.

iii. **Odd term** - Leukemia
Category - Hormonal / Endocrinal disorders

iv. **Odd term:** Household detergents
Category: Biomedical Wastes

v. Odd term - Polythene bag
Category - Biodegradable wastes

(v) Match the items given in Column I with the most appropriate ones in Column II and rewrite the correct matching pairs.

i. (a) - (iii), (b) - (iv), (c) - (v), (d) - (ii)

Section B

3. Question 3

(i) The dihybrid ratio is 9 : 3 : 3 :1
Based on the observation in dihybrid crosses, Mendel proposed law of independent assortment (third law) which states that when two pairs of contrasting characters are combined in a hybrid, segregation of members of one pair of gamete is independent to member of another pair of gamete.

(ii) For each gene corresponding to X-linked traits, females always have two alleles since they have two X-chromosomes. Males only have one allele of genes related to X-linked traits, since they have only one X- chromosome.

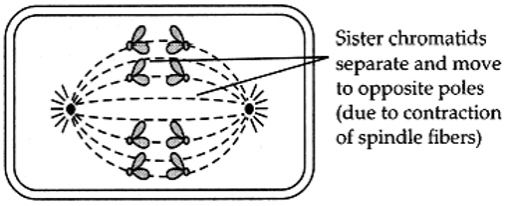
(iii) In oocytes of some vertebrates, diplotene can last for months or years.

i. Lampbrush chromosomes or diplotene chromosomes are found in the diplotene stage of most animal oocytes of frog or amphibians.

ii. Lampbrush chromosomes are observed in meiotic prophase. These chromosomes become normal after growth and thus completing the cell cycle.

(iv) Sex-linked inheritance is the appearance of a trait which is due to the presence of an allele exclusively located on X-chromosome or Y-chromosome. This can be classified into two types X-linked inheritance and Y-linked inheritance.

(v) Anaphase stage of mitosis in animal cell is given below:



4. Question 4

(i) Medulla oblongata controls the involuntary activities of the brain.

(ii) i. The membranous labyrinth of inner ear is filled with a fluid called endolymph. The coiled portion of the labyrinth is called cochlea.

ii. Organ of Corti is a structure located on the basilar membrane of inner ear, which contains hair cells that act as auditory receptors.

(iii) The CNS includes the brain and the spinal cord and is the site of information processing and control. The PNS comprises of all the nerves of the body associated with the CNS (brain and spinal cord).

(iv) The cortex of the cerebrum is covered by a number of small, deep and shallow folds called sulci whereas, the convolutions of the brain, i.e. larger grooves (folds) that cover the cortex of the cerebrum is called gyri.

(v) i. **Reflex action:** It is an involuntary action of any organ or part of the body in response to a particular stimulus without the involvement of the central nervous system.

ii. **Power of accommodation:** The adjustment of the eye to enable it to focus at various distances is called a power of accommodation.

iii. **Synapse:** It is the junction of two adjacent neurons, between the axon ending of one neuron and the dendrite of the other.

5. Question 5

(i) Chlorophyll absorbs photons of sunlight and helps in the splittng of water molecules into hydrogen ions and hydroxyl ions.

(ii) Carboxylation is the most crucial step of the Calvin cycle, where CO is utilised for the carboxylation of RuBisCO. This reaction is catalysed by the enzyme RuBP carboxylase which results in the formation of 2 molecules of 3PGA. Since, this enzyme also has an oxygenation activity, it would be more correct to call it RuBP carboxylase-oxygenase or RubBisCO.

(iii) Chlorophyll has various pigments like a and b. These pigments have a tendency to absorb different light or different wavelengths. Thus, this characteristic feature of various pigments of chlorophyll makes them most effective for photosynthesis.

(iv) ATP, NADPH, and oxygen are the products of the light reaction of photosynthesis. ATP and NADPH are used in the reduction step of biosynthetic phase of photosynthesis. Oxygen is liberated into the atmosphere.

(v) a. In the given experiment, bubbles of oxygen are released due to the process of light reaction of photosynthesis.

b. Hydrilla is a water plant which is used for such experiments.

c. $6CO_2 + 12H_2O \xrightarrow[Sunlight]{Cholophyll} C_6H_{12}O_6 + 6H_2O + 6O_2 \uparrow$

6. Question 6

(i) RNA and proteins are synthesised in both G_1-phase and G_2-phase.

(ii) Cell division, cell reproduction or cell multiplication is the process of formation of new daughter cells from the pre-existing cell or parent cell. It is of three types

i. Amitosis

ii. Mitosis

iii. Meiosis.

A cell divides when it attains the size and the nucleocytoplasmic ratio disturbs. The DNA duplication also causes a cell to divide.

(iii) a. The tropic movement mention in (a) is Chemotropism.

b. The growth or movement of a plant or part of plant in response to a chemical stimulus is called chemotropism.

c. The part marked A is Pollen tube.

7. Question 7

(i) i. Branching descent
ii. Natural selection.

(ii) According to Darwin's concept of natural selection, the organisms, which are provided with favourable variations would survive because they are fittest to face their surrounding, while the organisms, which are unfit for surrounding variations are destroyed.

(iii) i. Homo erectus
ii. Neanderthal man
iii. Homo habilis

(iv) Population explosion leads to the depletion of natural resources and per capita income, fall in general health and many other problems. Therefore, the authors are justified in saying that a population explosion is far more dangerous than an atomic explosion.

(v) a. Blood vessels labelled as A, C, F and G are as follow:
A - Pulmonary artery
C - Hepatic portal vein
F - Hepatic vein
G - Posterior vena cava

b. The blood vessel that supplies the walls of the heart with oxygen is the coronary artery.

c. The structural difference between blood vessels labelled D (renal artery) and E (renal vein) is:

D (Renal Artery)	E (Renal Vein)
Has a thick muscular wall with narrow lumen.	Has a thin muscular wall with wide lumen.

8. Question 8

(i) The pressure generated by the cortical cells of the root that pushes the water and minerals into the xylem vessels for the upward conduction upto the stem level is known as root pressure.

(ii) Fibrinogen, globulins and albumins are the major plasma proteins. Fibrinogens are needed for clotting or coagulation of blood.
Globulins primarily are involved in defence mechanism of the body and the albumins help in osmotic balance.

(iii) Industrial setup near bank of river disposes its wastes. These wastes are accumulated in aquatic animals which are later eaten up by humans. Thus, the health of such humans becomes degraded and they may suffer from severe nervous system problems.

(iv) a. The defect is myopia\ nearsightedness.

b. Different parts labelled from A to C are:
A - Vitreous humour
B - Yellow spot
C - Optic nerve

c. Two possible reasons for the defects are:
i. The eyeball becomes long from front to back.
ii. The lens becomes too curved/convex.