ICSE 2026 EXAMINATION
Sample Question Paper - 4
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 morphological differences between parents and offsprings are called **[1]**

a) variations b) heredity

c) taxonomy d) morphology

(b) The first stable product formed during CO_2 fixation is **[1]**

a) abscisic acid b) glucose

c) oxygen d) Phosphoglyceric Acid (PGA)

(c) On which date is a woman most likely to ovulate, if the first day of menstrual loss was 1 February? **[1]**

a) 14 February b) 28 February

c) 1 March d) 6 February

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

a) Methane b) Sulphur dioxide

c) Oxygen d) Nitrogen

(e) The chemical used in the demonstration of experiment on transpiration is **[1]**

a) potassium hydroxide b) sodium hydroxide

c) cobalt chloride d) calcium chloride

(f) **Assertion (A):** CFCs deplete the ozone layer. **[1]**
Reason (R): CFCs are used as refrigerants and in fire extinguishers.

a) Both A and R are true and R is the b) Both A and R are true but R is not the

correct explanation of A.

correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

(g) The major advantage of bipedal locomotion is that it **[1]**

a) releases the forelimbs for other better functions

b) reduces body weight

c) increases speed

d) provides better body support

(h) The formation of urine in our excretory system is known as **[1]**

a) uropoiesis

b) haemopoiesis

c) Erythropoiesis

d) leucopoiesis

(i) Given below are the adaptations found in leaves to favour the occurrence of photosynthesis process. Select a statement which is incorrect. **[1]**

a) Presence of numerous stomata

b) Increased chloroplasts on lower surface

c) The thinness of leaves

d) Large surface area of leaves

(j) In a human male, a sperm will contain: **[1]**

a) Only Y chromosome

b) Either X or Y chromosome

c) Both X and Y chromosomes

d) Only X chromosome

(k) Synthesis phase in the cell cycle is called so, because of the synthesis of more: **[1]**

a) RNA

b) RNA and proteins

c) DNA

d) Glucose

(l) Feeling the tremors of an earthquake, a scared resident of seventh floor of a multistoreyed building starts climbing down the stairs rapidly. Which hormone is responsible for initiation of this action? **[1]**

a) Thyroxine

b) Gastrin

c) Glucagon

d) Adrenaline

(m) Compressed Natural Gas (CNG) is **[1]**

a) butane

b) methane

c) propane

d) ethane

(n) A plant is kept in a dark cupboard for about 48 hrs before conducting any experiment on photosynthesis to **[1]**

a) remove chlorophyll form leaves

b) Ensure that no photosynthesis occurs

c) ensure that the leaves are free from starch

d) remove starch from the plant

(o) The part of eye which is grafted in a needy patient from a donated eye is. **[1]**

a) cornea

b) ciliary muscles

c) choroid

d) conjunctiva

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

(a) **Name the following:**

i. Identify and name the following: **[1]**

A major component of all the cells, i.e a universal medium in which all substances can be dissolved.

ii. 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]**

iii. Identify and name the following: **[1]**

Hormones that regulate the secretion of other endocrine glands.

iv. Identify and name the following: **[1]**

The pituitary hormone which stimulate the contraction of uterus during child birth.

(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. Correct the following statement and rewrite: **[1]**

Foetus: Amnion :: Heart: _____

ii. Correct the following statement and rewrite: **[1]**

Correct and rewrite the statements by changing the biological term that is underlined for each statement:

The part of the eye which can be donated from a clinically dead person is the Retina.

iii. Why renal portal system is absent in mammals? **[2]**

iv. Correct the following statement and rewrite: **[1]**

Cytoplasm : Cytokinesis : : Nucleus : _____

(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. Urethra, uterus, urinary bladder, ureter. **[1]**

ii. Insulin, Adrenaline, Pepsin, Thyroxine. **[1]**

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

iv. Sewage, Newspaper, Styrofoam, Hay **[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. State Mendel's law of dominance. **[1]**

Section B

Attempt any 4 questions

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

(a) Rewrite and complete the following sentence by inserting the correct word in the space indicated. **[1]**

Phenotype is the observable characteristic which is _____ controlled.

(b) In a cross between a pure breed, red-eyed female fruitfly and a white-eyed male, what percentage of the male offsprings will have white eyes? (White eyes are X-linked, recessive). **[2]**

(c) Differentiate between G_1 and G_2-phase. **[2]**

(d) A couple got only four daughters in a row and no son. Do you agree that it is because the husband does not produce Y-bearing sperms? Justify. **[2]**

(e) Briefly describe: **[3]**

i. A mitosis

ii. G_2 phase.

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

(a) Given below is the chemical found in human brain, write its special functional activity. **[1]**
Neurotransmitters.

(b) Explain the mechanism of focusing the image of a distant object in our eye when we raise our head after reading a book. **[2]**

(c) During a street fight between two individuals, mention the effects on the following organs by the autonomous nervous system, in the table given below (one has been done for you as an example). **[2]**

Organs	Sympathetic Nervous System	Parasympathetic Nervous System
Lungs	Dilates bronchi and bronchioles	Constricts bronchi and bronchioles
Pupil of the eye		
Salivary gland		

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

(e) Draw a well labelled diagram of a neuron showing the following parts: Dendrites, axon, node of Ranvier and myelin sheath. **[3]**

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

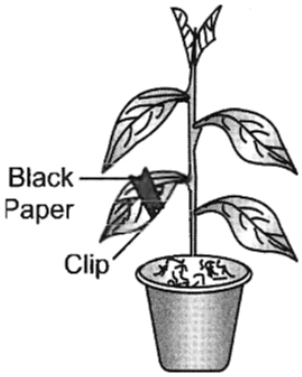
(a) Briefly explain the term photophosphorylation. **[1]**

(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) Suppose there were plants that had a high concentration of chlorophyll-b but lacked chlorophyll-a, would it carry out photosynthesis? Also, mention why do plants have chlorophyll-b and other accessory pigments? **[2]**

(e) The diagram given below represents an experiment conducted to prove the importance of a factor in photosynthesis. Study the same and then answer the questions that follow. **[3]**



a. Name the factor being studied in this experiment.

b. Name the solution used to test for the presence of starch in the leaf and put it.

c. Give a balanced chemical equation to represent the process of photosynthesis.

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

(a) Write the name of the four nitrogen bases in a DNA molecule. **[1]**

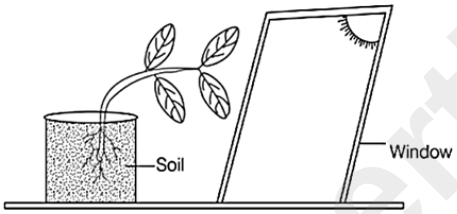
(b) List any two functions of uterus. **[2]**

(c) Define the following terms. **[2]**

i. Fertilisation

ii. Ovulation

(d) The diagram given below represents a plant growing in a glass jar. The glass jar is placed near a window. Study the diagram and answer the questions that follows: **[3]**



a. Name the tropic movements shown by the shoot and roots.

b. What is the stimulus that made the shoot bend towards the window?

c. Which plant hormone caused the above effect?

(e) Describe Lamarck's theory of evolution. **[2]**

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

(a) Who among the Dryopithecus and Ram apithecus was more man-like? **[1]**

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

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

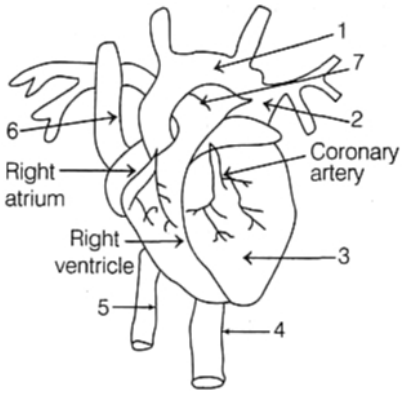
ii. More human with brain size 1400 cc, lived in Central Asia, used hides and buried their dead.

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

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

(d) What are the age restrictions for marriage for boys and girls in India. **[2]**

(e) Given below is a diagram of the external features of the heart. **[3]**



a. What happens if the coronary artery gets an internal clot?

b. What type of blood does 5 carry?

c. Mention one structural difference between 5 and 4.

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

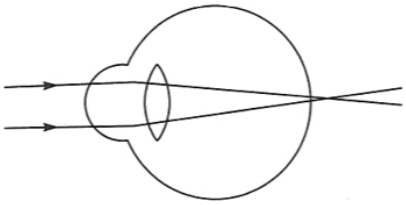
(a) Explain the term turgidity. **[1]**

(b) Mention the two fluids that circulate in the body. **[2]**

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

(d) Explain the cause of algal bloom in a water body. How does it affect an ecosystem? **[2]**

(e) Given below is a diagrammatic representation of a defect of the human eye: **[3]**



a. Identify the defect.

b. Mention two reasons for the above defect.

c. Name the part of the eye responsible; for maintaining the shape of the eyeball.

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) **(a)** variations
Explanation:
variations

(ii) **(d)** Phosphoglyceric Acid (PGA)
Explanation:
Phosphoglyceric Acid (PGA)

(iii) **(a)** 14 February
Explanation:
Women mostly ovulate on mid pf the cycle therfore14 February is ovulating day

(iv) **(a)** Methane
Explanation:
Methane

(v) **(c)** cobalt chloride
Explanation:
cobalt chloride

(vi) **(a)** Both A and R are true and R is the correct explanation of A.
Explanation:
The ozone layer is getting depleted at the higher levels of the atmosphere due to the effect of chlorofluorocarbons (CFCs) which are used as refrigerants and in fire extinguishers.

(vii) **(a)** releases the forelimbs for other better functions
Explanation:
releases the forelimbs for other better functions

(viii) **(a)** uropoiesis
Explanation:
uropoiesis

(ix) **(b)** Increased chloroplasts on lower surface
Explanation:
Increased chloroplasts on lower surface

(x) **(b)** Either X or Y chromosome
Explanation:
The male sex chromosome either contain X or Y chromosome.

(xi) **(c)** DNA
Explanation:
DNA

(xii) **(d)** Adrenaline
Explanation:
Adrenaline

(xiii) **(b)** methane
Explanation:
methane

(xiv) **(d)** remove starch from the plant
Explanation:

remove starch from the plant

(xv) **(a)** cornea

Explanation:

The part of eye which is grafted in a needy patient from a donated eye is cornea.

2. Question 2

(i) Name the following:

i.

ii. 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.

iii. 1. Tropic hormones

iv. 1. Oxytocin

(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. Pericardium

ii. The part of the eye which can be donated from a clinically dead person is the Cornea.

iii. Renal portal system is absent in mammals due to following reasons

i. The heart of mammals is four-chambered, due to which there is total separation of oxygenated and deoxygenated blood.

ii. Posterior portion of body gets oxygenated blood from heart. After oxidation, the blood does not contain much impurities that it should go to kidneys for filtration.

iv. 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 -** Uterus, a part of reproductive system.
Category - Organs of excretory system

ii. **Odd term** - Pepsin
Category - Hormones

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

iv. Odd term- Styrofoam is non-biodegradable, pollutant
Category- Biodegradable pollutants.

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. In a hybrid, where both the contrasting alleles or unit factors are present, only one unit factor/allele called dominant, is able to express its effect while the other factor allele called recessive, remains suppressed.

Section B

3. Question 3

(i) Phenotype is the observable characteristic which is genetically controlled.

(ii) 0%. All the males and females will be red-eyed. Pure breed female (XX) is homozygous for normal X-chromosome. White-eyed male (X°Y) is hemizygous for X-chromosome with a white eye mutation.

		Sperm	
		X°	Y
Egg	X	XX°	XY
	X	XX°	XY

Both male and female offsprings will inherit a normal X-chromosome from the female.

(iii)

G_1-phase	G_2-phase
It is called the first growth period.	It is a post-synthetic phase.
Its duration is variable.	It lasts for 2-5 years.
Cells grow in size.	Cell prepares to go into the mitotic phase.

(iv) No, the above situation does not mean that the husband does not produce Y-bearing sperms. It only means that in four consecutive pregnancies, the X-bearing sperms could fertilise the eggs which resulted in the birth of female children.

(v) i. **Amitosis:** A simple method of cell division is also called direct cell division. It was invented by Remak **(1855)**. There is no differentiation between chromosomes and spindle. The nuclear envelope does not degenerate. Nucleus elongates and constricts in middle to form two daughter nuclei. It is followed by a centripetal constriction of cytoplasm to make 2 daughter cells.

ii. **G_2-phase: G_2-Phase (second growth phase):** It is also called the pre-mitotic gap phase. It has double DNA content as compared to the original cell (4C: 2C). It produces macromolecules (RNAs, Proteins) for multiplication of organelles, spindle formation, and cell growth also. G_2 Phase prepares a cell to undergo division.

4. Question 4

(i) Neurotransmitters help in conduction of nerve impulses.

(ii) While reading a book (near by vision), the lens of our eye is more convex or rounded but when we focus our eye on a distant object, the ciliary muscles are relaxed.

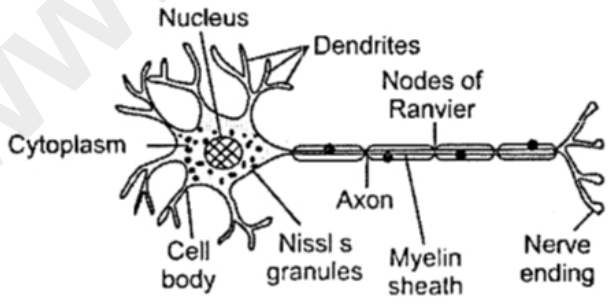
The lens becomes concave or flattened. This accommodation power of eye enables us to have a clear vision of objects at varying distances.

(iii)

Organs	Sympathetic Nervous System	Parasympathetic Nervous System
Lungs	Dilates bronchi and bronchioles	Constricts bronchi and bronchioles
Pupil of the eye	Dilates Pupil	Constricts Pupil
Salivary gland	Inhibits salivary glands and digestive glands	Stimulate salivary glands and digestive glands

(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.



Structure of a typical neuron

5. Question 5

(i) Photophosphorylation is the process of conversion of ADP into ATP during photosynthesis.

(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) Chlorophyll -a is the major pigment responsible for trapping light to carry out photosynthesis. Other thylakoid pigments like chlorophyll- b, xanthophylls and carotenoids, which are called accessory pigments, also absorb light and transfer the energy to chlorophyll- a.

Indeed, they not only enable a wider range of wavelengths of incoming light to be utilized for photosynthesis but also, protect chlorophyll-a from photo-oxidation.

(v) a. Sunlight is the factor being studied in the experiment.

b. Iodine solution is used to test for the presence of starch in the leaf.

c. $6CO_2 + 12H_2O \xrightarrow{Sunlight,\ chlorophyll} C_6H_{12}O_6 + 6H_2O + 6O_2 \uparrow$

6. Question 6

(i) Purines:

i. Adenine

ii. Guanine

Pyrimidines:

i. Cytosine

ii. Thymine

(ii) Functions of uterus are

i. It gives the suitable environment for the implantation of embryo.

ii. It contains amniotic fluid which protects the embryo from shock and jerks.

(iii) i. Fertilisation is the union of sperm and ova to produce a zygote.

ii. Ovulation is the release of ovum Graafian follicle in the ovary.

(iv) a. The tropical movement are phototropism by shoots and geotropism by roots.

b. Light is the stimulus that made the shoot bend towards the window.

c. Auxin causes the above effect.

(v) **Lamarck's Theory:** It is known as theory of inheritance of acquired characters. According to this theory, organisms undergo certain changes to adapt themselves to the environment. These characters acquired by an organism during its lifetime, are passed on to the progeny, e.g. the long neck of giraffe was explained by Lamarck, as an outcome of these animals having to stretch their necks constantly to eat the leaves on the upper branches of the trees.

7. Question 7

(i) Ramapithecus was more man-like. They walked erect on their hindlegs, ate hard nuts and seeds like modern man and had jaws and teeth similar to humans. They arose from Dryopithecus, which was considered to be a common ancestor of man and apes.

Dryopithecus was more ape-like and had same length of arms and legs.

(ii) i. Homo erectus

ii. Neanderthal man

iii. Homo habilis

(iii) 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.

(iv) Age restriction for boys is 21 years and girls is 18 years in India.

(v) a. If the coronary artery gets a clot the corresponding part of the heart does not get blood supply. It may cause a heart attack.

b. '5' carries deoxygenated blood.

c. '5' is the vena cava which has thin muscular walls while '4' is the aorta which has thick muscular walls.

8. Question 8

(i) Turgidity is a condition of being fully distended due to endosmosis. Healthy plant cells are turgid and plants rely on turgidity to maintain rigidity.

(ii) Two fluids that circulate in the body are

i. Blood is a fluid connective tissue which is found circulating inside the body. It is bright red in colour.

ii. Lymph is the tissue fluid, that flows in the lymph vessels. It is a colourless fluid.

(iii) 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.

(iv) Algal bloom is caused by the enrichment of nutrients in the water body, especially by the presence of phosphorus and nitrogen.

It affects the ecosystem in following ways

i. Deterioration of water quality.

ii. Death of aquatic organisms.

(v) a. The defect is hypermetropia also known as farsightedness because the image is formed behind the retina.

b. The defect arises due to the following reasons:

i. The focal length of the eye becomes large.

ii. Eyeball becomes too short so that the image is formed behind retina.

c. Ciliary muscles are responsible for controlling/maintaining the shape of the eyeball.