

# ICSE 2026 EXAMINATION

## Sample Question Paper - 5

### Biology

Time Allowed: 2 hours

Maximum Marks: 100

#### 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) In humans, the sex ratio is very close to 50 : 50. The best genetic explanation for this is [1]
- |                   |                  |
|-------------------|------------------|
| a) transformation | b) segregation   |
| c) linkage        | d) crossing over |
- (b) Find out the mismatched pair. [1]
- |   |   |
|---|---|
| a) Primary CO <sub>2</sub> acceptor of C <sub>3</sub> -plants- RuBP | b) Calvin pathway of C <sub>4</sub> -plants occurs in - Bundle sheath     |
| c) C <sub>4</sub> -plants - Kranz anatomy                           | d) Primary CO <sub>2</sub> fixation product-OAA of C <sub>4</sub> -plants |
- (c) On which day of the menstrual cycle does ovulation take place? [1]
- |                        |                         |
|------------------------|-------------------------|
| a) 1 <sup>st</sup> day | b) 14 <sup>th</sup> day |
| c) 5 <sup>th</sup> day | d) 28 <sup>th</sup> day |
- (d) Which one of the following is a greenhouse gas? [1]
- |            |                    |
|------------|--------------------|
| a) Methane | b) Sulphur dioxide |
| c) Oxygen  | d) Nitrogen        |
- (e) The rate of transpiration will be fastest when the day is: [1]
- |                         |                          |
|-------------------------|--------------------------|
| a) Hot, dry and windy   | b) Cool, humid and windy |
| c) Hot, humid and windy | d) Hot humid and still   |
- (f) **Assertion (A):** Ozone depletion can be reduced by limiting the use of air conditioners and [1]

refrigerators.

**Reason (R):** Air conditioner and refrigerators release chlorofluorocarbons in the atmosphere that destroy ozone.

- 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) The most accepted line of descent is human evolution is [1]
- a) Homo habilis → Australopithecus → Ramapithecus → Homo erectus                      b) Australopithecus → Ramapithecus → Homo sapiens → Homo habilis
- c) Homo erectus → Homo habilis → Homo sapiens                      d) Ramapithecus → Homo habilis → Homo erectus → Homo sapiens
- (h) The proximal convoluted tubule of a nephron is present in [1]
- a) ureter                      b) Vasa recta
- c) medulla                      d) cortex
- (i) Photosystem-II features are [1]
- i. Absorbs 680 nm wavelength light
- ii. Supplies electron to cytochrome centre
- iii. Supplies electron to  $\text{NADP}^+$
- a) (i) and (ii)                      b) (i), (ii) and (iii)
- c) (i) and (iii)                      d) (ii) and (iii)
- (j) The technical term for the fertilized egg is [1]
- a) zygote                      b) morula
- c) Fungi                      d) placenta
- (k) The region where crossing over in chromosome occurs is [1]
- a) chiasmata                      b) spindle fibres
- c) cell plate                      d) chromomere
- (l) The child frightened by the loud noise, runs quickly to his mother. [1]  
Which substance helps in this response?
- a) Insulin                      b) Amylase
- c) Adrenaline                      d) Protease
- (m) Which one of the following is non-biodegradable? [1]
- a) DDT                      b) Cardboard
- c) Vegetable peel                      d) Bark of trees
- (n) Chlorophyll pigment is present in/on [1]
- a) the grana of chloroplast                      b) the surface of chloroplast
- c) the lamellar membrane                      d) the stroma of chloroplast



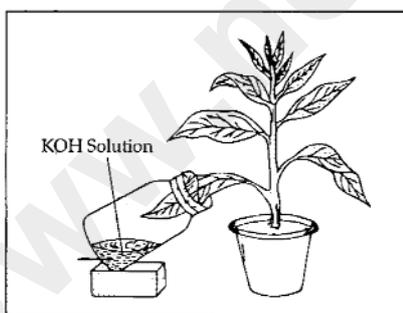
- (c) What happens when a normal cell turns into a malignant cell? [2]
- (d) List any three features of garden pea with their dominant and recessive traits. [2]
- (e) A certain species has three pairs of chromosomes- an acrocentric pair and two metacentric pairs. [3]  
Draw a cell of this species as it would appear in metaphase of mitosis.

4. **Question 4** [10]

- (a) State the main functions of tears. [1]
- (b) Given below are two structures, write their special functional activity. [2]
  - i. Myelin sheath
  - ii. Relay neuron
- (c) Explain the mechanism of focusing the image of a distant object in our eye when we raise our head after reading a book. [2]
- (d) Explain, what does nervous system consist of? [2]
- (e) Draw a well labelled diagram of a neuron and name the following parts: [3]
  - i. Node of Ranvier
  - ii. Nissl's granules
  - iii. Cyton

5. **Question 5** [10]

- (a) Mention any three adaptations found in the plant to favour the process of photosynthesis. [1]
- (b) 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]
- (c) What conditions enable RuBisCO to function as an oxygenase? Explain the ensuring process. [2]
- (d) Draw a simple labelled diagram of a stomatal apparatus as seen in surface view. [2]
- (e) The diagram given below represents an experiment to prove the importance of a factor in photosynthesis. Answer the questions that follow: [3]



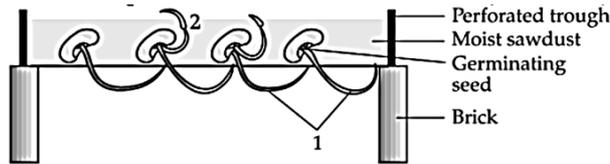
- a. Which factor is being studied here?
- b. What is the purpose of keeping KOH in the flask?
- c. Write a well balanced chemical equation for the process of photosynthesis.

6. **Question 6** [10]

- (a) Write the number of chromosomes present in a nerve cell of a human being. [1]
- (b) State the main function of the following [2]
  - i. Leydig cells
  - ii. Corpus luteum
- (c) Define the following terms. [2]
  - i. Fertilisation

ii. Ovulation

- (d) Given below is an experimental setup to demonstrate a particular tropic movement in germinating seeds. Study the diagram and answer the questions that follow: [3]

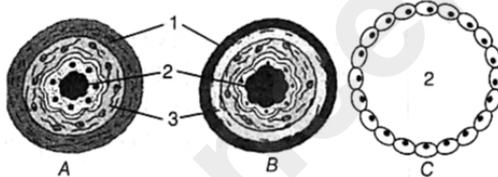


(i) Label the parts 1 and 2.

- Label the parts 1 and 2
  - Name the tropic movement shown by part 1.
  - What is thigmotropism? Give one example.
- (e) Explain Darwin's concept of natural selection. [2]

7. **Question 7** [10]

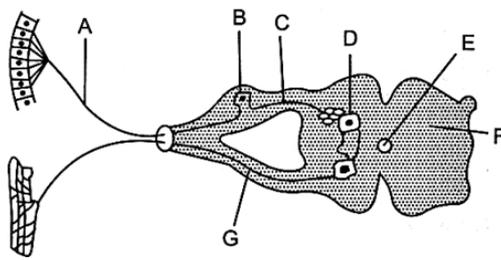
- What are fossils? [1]
- Name the ancestors of man based on the features given below [2]
  - Human-like meat eater with 900 cc brain, lived in Java.
  - More human with brain size 1400 cc, lived in Central Asia, used hides and buried their dead.
  - Human-like, vegetarian, with brain capacity between 650 cc and 800 cc.
- Explain how vestigial organs give an idea about evolution. [2]
- A rapid increase in population of the world is seen between 1900-2000. It was less than a billion in 1900 and then 7 billion today. Write down the contribution of medical science for this drastic increase of population size. [2]
- The diagrams given below are cross-sections of blood vessels [3]



- Identify the blood vessels A, B and C.
- Name the parts labelled 1 to 3.
- Mention one structural difference between A and B.

8. **Question 8** [10]

- Explain the following term: Diffusion [1]
- From where to where do the following blood vessels carry blood? [2]
  - Hepatic vein
  - Hepatic portal vein
- What is the significance of time gap in the passage of impulse from sino-atrial node to the ventricle? [2]
- Ornithologists observed a decline in the bird population in the area near a lake after the setting of an industrial unit in the same area. Explain the cause responsible for the decline observed. [2]
- The diagram given below depicts the cross section of the spinal cord. Study the same and then answer the questions that follows: [3]



- Name the process that is being depicted.
- Name the parts labelled B, E and F.
- Name the cells in contact with the part labelled A.

www.ncertbooks.net

# 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)** segregation

**Explanation:**

segregation

(ii) **(a)** Primary CO<sub>2</sub> acceptor of C<sub>3</sub>-plants- RuBP

**Explanation:**

Primary CO<sub>2</sub> acceptor of C<sub>3</sub>-plants- RuBP

(iii) **(b)** 14<sup>th</sup> day

**Explanation:**

14<sup>th</sup> day of the menstrual cycle ovulation takes place.

(iv) **(a)** Methane

**Explanation:**

Methane

(v) **(a)** Hot, dry and windy

**Explanation:**

Hot, dry and windy

(vi) **(a)** Both A and R are true and R is the correct explanation of A.

**Explanation:**

Both A and R are true and R is the correct explanation of A.

(vii) **(d)** Ramapithecus → Homo habilis → Homo erectus → Homo sapiens

**Explanation:**

Ramapithecus → Homo habilis → Homo erectus → Homo sapiens

(viii) **(d)** cortex

**Explanation:**

cortex

(ix) **(a)** (i) and (ii)

**Explanation:**

Absorbs 680 nm wavelength light and Supplies electron to cytochrome centre.

(x) **(a)** zygote

**Explanation:**

zygote

(xi) **(a)** chiasmata

**Explanation:**

chiasmata

(xii) **(c)** Adrenaline

**Explanation:**

Adrenaline

(xiii) **(a)** DDT

**Explanation:**

DDT

(xiv) **(d)** the stroma of chloroplast

**Explanation:**

the stroma of chloroplast

(xv) (c) retina

**Explanation:**

Retina contains two types of photoreceptors, rods and cones.

2. Question 2

(i) Name the following:

i.

S-phase	G <sub>2</sub> -phase
It is called a synthetic phase.	It is called the pre-mitotic phase.
Replication of DNA occurs.	RNA of all three types and proteins precursors of asters and spindle are synthesised in it.
It lasts for 6-8 hours	It lasts for 2-5 years.

iii. 1. Pituitary gland

2. Pituitary

iv. 1. Glucagon

(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. False, Nucleus is a part of the cell in which chromosomes are present.

ii. Acid rain causes corrosion of the marble or brick surface.

iii. Heterozygous

iv. The given statement is false. Correct statement is: Ureter carries urine from kidney to the urinary bladder.

(iii) Fill in the blanks with suitable words:

i. (i) light, (ii) relative, (iii) wind, (iv) ambient, (v) stomata

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

i. Odd term - Chicken pox

Category - Genetic diseases

ii. **Odd term:** Seminiferous tubule.

**Category:** Accessory glands.

Category	Odd one
Accessory glands (man)	Lachrymal gland

iv. Odd Term - Pericardium

Category - Rest are components of blood vessels

v. Odd one: Monocytes; other belongs to Granulocytes.

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

i. Male Embryo: XY

Female Embryo: XX

**Section B**

3. Question 3

(i) Colour blindness and Haemophilia

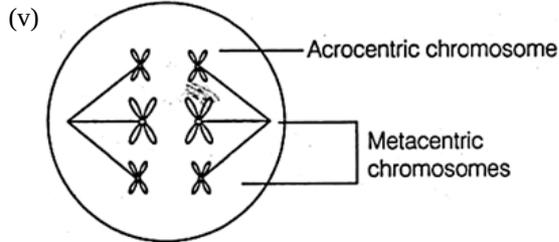
(ii) For each gene corresponding to X-linked traits, females always have two alleles since they have two X-chromosomes.

Males only have one allele of genes related to X-linked traits, since they have only one X- chromosome.

(iii) Cells usually stop dividing after certain number of divisions. In malignant or cancerous cells this automatic stoppage of cell division does not work. As a result malignant cells keep on dividing endlessly causing tumour or the cancerous growth.

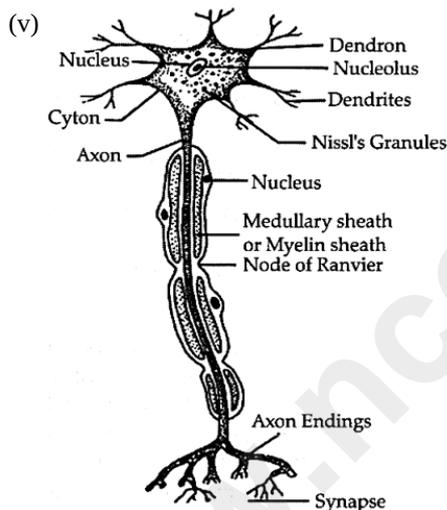
Character	Dominant	Recessive
Stem height	Tall	Short
Colour of seed	Yellow	Green

Shape of seed	Round	Wrinkled
---------------	-------	----------



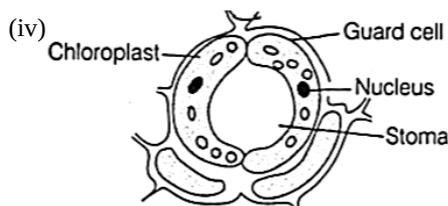
4. Question 4

- (i) Tears lubricate surface of eye, wash away dust, kill germs, keep surface of eye moist, lysozyme present in tear kills bacteria.
- (ii) i. **Myelin sheath:** It provides an insulation around the axon for increasing the speed of impulses.  
 ii. **Relay or connecting neuron:** It serves as a link between the sensory and motor neuron. These are mainly found in brain and spinal cord.
- (iii) 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.
- (iv) The nervous system consists of
- Central Nervous System (CNS):** It comprises brain and spinal cord.
  - Peripheral Nervous System (PNS):** It comprises cranial and spinal nerves.
  - Autonomic Nervous System (ANS):** It comprises parasympathetic and sympathetic nerves.

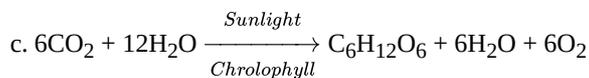


5. Question 5

- (i) Large surface area to maximize light harvesting, presence of more stomata to allow rapid exchange of gases, presence of transparent cuticle and epidermis to allow light to enter freely and move easily.
- (ii) 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.
- (iii) Carboxylation is the most crucial step of the Calvin cycle, where CO<sub>2</sub> 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.



- (v) a. Carbon dioxide is necessary for photosynthesis studied in the above experiment.  
 b. KOH in the flask remove CO<sub>2</sub> gas.



6. Question 6

- (i) All the cells of the body except gamete cells contain 46 (23 pairs) of chromosome. The nerve cell of human beings are somatic cells and hence contain 46 chromosome.
- (ii) i. Leydig cells produce testosterone (the male hormone).  
ii. Corpus luteum produces and secretes progesterone (the female hormone).
- (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. Part 1 and 2 is as follows  
1- Radicle  
2- Plumule  
b. The tropic movement is hydrotropism.  
c. Movement of plant in response to touch stimulus.  
**Example:** Pea, Vines, Cuscuta, Cucumber
- (v) 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.

7. Question 7

- (i) Fossils are the remnants and/or impressions of the life forms that lived in the remote past.
- (ii) i. Homo erectus  
ii. Neanderthal man  
iii. Homo habilis
- (iii) Those organs, which no longer have a function in our body are known as vestigial organs. These organs have reduced structurally as well as functionally. It appears that these organs were once well-developed and functional in ancestors and later on due to their less use they become reduced, e.g. vermiform appendix in man is reduced and functionless while in herbivores vermiform appendix along with caecum is used for digestion of cellulose. It gives an idea that human had herbivorous food habit and cellulose containing materials were major part of their food.
- (iv) Improved medical facilities and public health measures has led to an increase in population of the world. Progress in the field of medical science, along with the health services made available to the countries by International health organisations.  
They have brought epidemics and diseases under control. This has reduced the mortality rate to a large extent. The public health programmes have improved the water supply and sanitary conditions. The health programmes also provide for distribution of free milk to poor children in municipal schools. All this has improved the general health of the people.
- (v) a. The blood vessel A, B and C are  
A - Artery  
B - Vein  
C - Capillary  
b. 1 - Tunica adventitia  
2- Lumen  
3 - Tunica media  
c. The structural difference between A and B is

A (Artery)	B (Vein)
They have narrow lumen and valves are absent.	They have widen lumen and valves are present.

8. Question 8

- (i) Diffusion is the movement of molecules of a substance (gas, liquid or solid) from the region of higher concentration to the region of lower concentration.
- (ii) i. Hepatic vein carries blood from liver to posterior vena cava.  
ii. Hepatic portal vein carries blood from intestine to liver.
- (iii) The time gap in the passage of impulse from sino-atrial node to the ventricles allows ventricles to relax. Fall in the ventricular pressure, results in the closing of semilunar valves which prevents the backflow of blood into the ventricles.

- (iv) An industrial unit discharged waste water in the natural water bodies like lake, river. Hence, such contaminated water once consumed by birds, aquatic plants and animals will cause death of those organisms. This situation may lead to the declination of the population of birds, plants and organisms.
- (v) a. The process depicted by this diagram is known as reflex action.
- b. **Labelled parts B, E and F are given below**
- B - Dorsal root ganglion
  - E - Central canal
  - F - Grey matter
- c. The cells in contact with the part labelled as 'A' is known as receptor.

www.ncertbooks.net