ICSE 2025 EXAMINATION

Sample Question Paper - 2

BIOLOGY

Time: 2 Hours. **Total Marks: 80**

General Instructions:

1. *Answers to this paper must be written on the paper provided separately.*
2. *You will be not allowed to write during first 15 minutes.*
3. *This time is to be spent in reading the question paper.*
4. *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

(Attempt all questions from this Section.)

Question 1

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

(i) **Assertion (A):** Incineration is the disposal of waste by dumping it in a pit.
Reason (R): Incineration is harmful as it releases fumes and harmful substances.

1. Both A and R are true
2. Both A and R are false
3. A is true and R is false
4. A is false and R is true

(ii) Which of the following tissues stores fat in the lower part of the dermis?

1. Stratified epithelium
2. Connective tissue
3. Adipose tissue
4. Areolar tissue

(iii) **Assertion (A):** *Plasmodium vivax* is responsible for causing malaria.
Reason (R): Malaria spreads through contaminated food and water.

1. Both A and R are true
2. Both A and R are false
3. A is true and R is false
4. A is false and R is true

(iv) The enzyme secreted in the stomach is

1. Trypsin
2. Amylopsin
3. Steapsin
4. Pepsin

(v) Which of the following bones is associated with the forelimb?

1. Tibia
2. Femur
3. Ulna
4. Tarsals

(vi) **Assertion (A):** Gymnosperms do not produce fruits.
Reason (R): They are non-flowering plants.

1. Both A and R are true
2. Both A and R are false
3. A is true and R is false
4. A is false and R is true

(vii) 'X' is an animal which belongs to Phylum Annelida. It improves soil fertility. It is used in vermiculture to produce high-quality manure. Many people use 'X' as bait in catching fish. Identify 'X'.

1. Leech
2. Earthworm
3. Tapeworm
4. Nereis

(viii) Which of the following produces mucus in the respiratory passage?

1. Ciliated cells
2. Air sacs
3. Goblet cells
4. Tertiary bronchi

(ix) Ramesh got injured while playing football. His knee got bruised and started bleeding. His coach immediately washed his wound with clean water and applied some chemical over it. Which of the following chemicals would have been applied on the wound?

1. Phenol
2. Boric acid
3. Cresol
4. Lysol

(x) Entry and exit of substances in and out of the cell is regulated by the

1. Cell wall
2. Cell membrane
3. Nucleus
4. Centrosome

(xi) **Assertion (A):** Antibiotics are produced by bacteria and fungi.
Reason (R): Antibiotics are effective against viruses.

1. Both A and R are true
2. Both A and R are false
3. A is true and R is false
4. A is false and R is true

(xii) Given below are some characteristics of a plant tissue.

I. Cells are elongated.
II. Cell wall is thickened at the corners.
III. It is found in the leaf stalks and below the epidermis of stems.
IV. It helps to support the parts of the plant.

Identify the tissue.

1. Collenchyma
2. Sclerenchyma
3. Parenchyma
4. Phloem

(xiii) The process of fruit formation without fertilisation is called

1. Double fertilisation
2. Parthenocarpy
3. Triple fusion
4. Apogamy

(xiv) Which of the following is a condition of united sepals?

1. Gamosepalous
2. Polysepalous
3. Epiphyllous
4. Gamopetalous

(xv) The enzyme which converts fats into fatty acids is

1. Enterokinase
2. Lipase
3. Maltase
4. Steapsin

Question 2

(i) Name the following: **[5]**

(a) The compound formed by the combination of haemoglobin and carbon dioxide.
(b) The enzyme which converts leftover starch into maltose.
(c) The strong chemical substance applied on spots to kill germs.
(d) The lymph vessel present inside the villus.
(e) The specialised international agency of the UNO which looks after the health problems of the people in the world.

(ii) Match the following: **[5]**

Antibiotic	Source organism
1. Streptomycin	a. *Streptomyces aureofasciens*
2. Chlorotetracycline	b. *Bacillus subtilis*
3. Penicillin	c. *Streptomyces griseus*
4. Bacitracin	d. *Streptomyces erythraeus*
5. Erythromycin	e. *Penicillium chrysogenum*

(iii) State whether the following statements are True or False. Correct and rewrite the false statements. **[5]**

(a) Meibomian glands are modified sweat glands.
(b) Sebum is the slimy secretion of the epithelial lining of various organs.
(c) In mammals, the neck consists of eight vertebrae.
(d) Body cavity is absent in Platyhelminths.
(e) Molar teeth are used for tearing food.

(iv) State one point of difference between the following pairs on the basis of what is indicated in the brackets. **[5]**

(a) Centrosome and chromosome [definition]
(b) Anaerobic respiration in plants and animals [products]
(c) Parenchyma and sclerenchyma [type of cells]
(d) Meristematic and permanent tissue [cell division]
(e) Antiseptics and Disinfectants [nature]

(v) Find the odd one out and mention the category for the rest: **[5]**

(a) Trachea, Larynx, Bronchi, Oesophagus
(b) Endoplasmic reticulum, Centrosome, Plastid, Cell wall
(c) Vegetable peel, Plastic bottle, Discarded CD, Metal can
(d) Cholera, Leprosy, Syphilis, Jaundice
(e) Horse, Camel, Rabbit, Platypus

SECTION B

(Attempt any four questions from this section.)

Question 3

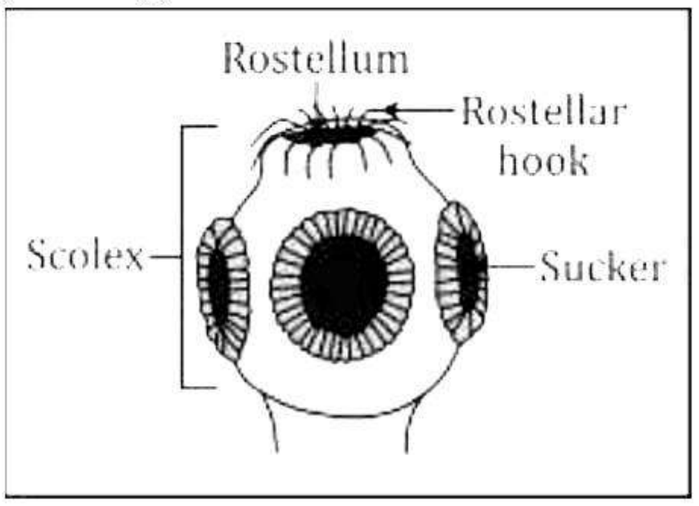
(i) Name two minerals present in the teeth. [1]

(ii) Draw a neat diagram of the fibrous connective tissue. Label its four important parts. [2]

(iii) Mention any two contrivances in flowers which favour cross-pollination. [2]

(iv) State any two differences between an embryo and a seed. [2]

(v) The given figure shows the head of an animal. [3]



(a) Name the animal.

(b) Is it a parasite or free-living animal?

(c) State the importance of suckers for the animal.

Question 4

(i) Name the kind of tissue found at the joint between two long bones. [1]

(ii) Why do you shiver and your teeth chatter when it is very cold in winter? [2]

(iii) Why is it generally advised that every living room in the house should get direct sunlight at least for a short time? [2]

(iv) What is the role of incisors and canines? [2]

(v) What are the end-products of the digestion of starch, proteins, and fats respectively? [3]

Question 5

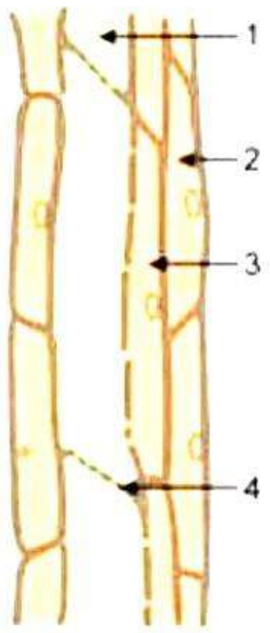
(i) Name *any two* parts of your body where the supporting skeleton is made of cartilage instead of bone. [1]

(ii) An otherwise normal healthy young man started perspiring, while it was intensely cold outside. What could have been one reason for it? [2]

(iii) What is wrong in the statement 'We breathe in oxygen and breathe out carbon dioxide'? [2]

(iv) Suggest any two methods for controlling flies. [2]

(v) Study the diagram given below and then answer the questions that follow: [3]



(a) Identify the tissue and give a reason to support your answer.
(b) Name the parts labelled 1, 2, 3 and 4.
(c) Where is this tissue likely to be found in the plant?

Question 6

(i) Define hygiene. [1]
(ii) State *any two* functions of Red Cross. [2]
(iii) Broken glass utensils are a kind of non-biodegradable waste. [2]
(iv) Give any two differences between an organ and an organelle. [2]
(v) Name the three kinds of muscles found in the human body. In each case, name one region in the body where they are found. [3]

Question 7

(i) The androecium of pea flower is diadelphous. Give reason. [1]
(ii) Draw the structure of a mitochondrion. [2]
(iii) Give two examples, each of endospermic (albuminous) seeds, and non-endospermic (exalbuminous) seeds. [2]
(iv) Explain (*any two* reasons) why respiration is said to be the reverse of photosynthesis. [2]
(v) Why are scientific names of living beings considered better than their common names? [3]

Question 8

(i) In what respect do you consider bacteria as simple organisms? [1]
(ii) Give reason: Tinned and sealed food is not always safe to eat. [2]
(iii) List *any* two uses of antibiotics. [2]
(iv) Why is there no enzyme to digest vitamins? [2]
(v) Some people in old age complain of stiff joints. What do you think could be a possible reason for it? [3]

Solution

SECTION A

Solution 1

(i) A is false and R is true

(ii) Adipose tissue

(iii) A is true and R is false

(iv) Pepsin

(v) Ulna

(vi) Both A and R are true

(vii) Earthworm

(viii) Goblet cells

(ix) Boric acid

(x) Cell membrane

(xi) A is true and R is false

(xii) Collenchyma

(xiii) Parthenocarpy

(xiv) Gamosepalous

(xv) Lipase

Solution 2

(i)

(a) Carbamino haemoglobin

(b) Amylase

(c) Disinfectant

(d) Lacteal

(e) World Health Organisation (WHO)

(ii)

Antibiotic	Source organism
1. Streptomycin	c. *Streptomyces griseus*
2. Chlorotetracycline	a. *Streptomyces aureofasciens*
3. Penicillin	e. *Penicillium chrysogenum*
4. Bacitracin	b. *Bacillus subtilis*
5. Erythromycin	d. *Streptomyces erythraeus*

(iii)

(a) False. Meibomian glands are modified sebaceous glands.
(b) False. Mucus is the slimy secretion of the epithelial lining of various organs.
(c) False. In mammals, the neck consists of seven vertebrae.
(d) True.
(e) False. Canines are used for tearing food.

(iv)

(a) Differences between centrosome and chromosome [definition]:

Centrosome	Chromosome
It is a clear area of cytoplasm close to the nucleus, from which spindle fibres develop during cell division.	They carry hereditary information or genes which transmit genetic characters from parents to offspring.

(b) Differences between anaerobic respiration in plants and animals [products]:

Anaerobic respiration in plants	Anaerobic respiration in animals
Produces ethanol	Produces lactic acid

(c) Differences between parenchyma and sclerenchyma [type of cells]:

Parenchyma	Sclerenchyma
Cells are oval or spherical.	Cells are angular.

(d) Differences between meristematic tissue and permanent tissue [cell division]:

Meristematic tissue	Permanent tissue
Cells can actively divide.	Cells have lost their ability to divide.

(e) Differences between antiseptic and disinfectant [nature]:

Antiseptic	Disinfectant
They are mild germ-killing chemicals.	They are strong germ-killing chemicals.

(v)

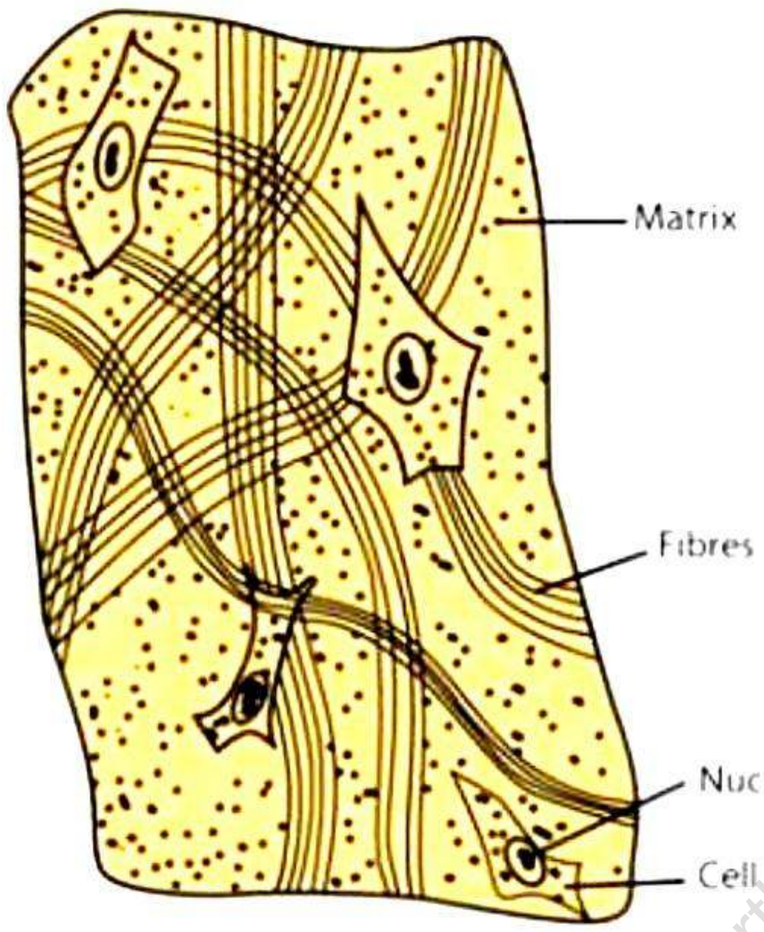
(a) Oesophagus (Rest are organs of the respiratory system)
(b) Centrosome (Rest are present in plant cells)
(c) Vegetable peel (Rest are non-biodegradable wastes)
(d) Jaundice (Rest are bacterial diseases)
(e) *Platypus* (Rest are mammals that give birth to young ones)

SECTION B

Solution 3

(i) Calcium and phosphorus.

(ii) <u>Fibrous connective tissue</u>



(iii) <u>Contrivances which favour cross-pollination:</u>

1. <u>Unisexuality</u>: The flowers may be either male or female and they may be borne on separate plants, thereby favouring cross-pollination, e.g., Papaya.
2. <u>Herkogamy</u>: In some flowers, the pollen of a flower cannot reach the stigma of the same flower due to a mechanical barrier, e.g., Pansy.

(iv) <u>Differences between an embryo and a seed:</u>

Embryo	Seed
1. It remains within the seed in an inactive or dormant state.	1. It is formed from the mature ovule after fertilisation.
2. When an embryo is exposed to favourable conditions, it germinates.	2. It contains a tiny living plant called the embryo.

(v)

(a) Tapeworm

(b) It is a parasite.

(c) Suckers help the animals to fix themselves to the gut wall of their hosts.

Solution 4

(i) Ligament (Connective tissue)

(ii) To maintain the body temperature constant in very cold conditions during winter, heat production is increased by enhanced metabolic rate and increased muscular activity. Shivering and chattering of teeth involve a lot of muscular activity. That is why we shiver and our teeth chatter in winter to increase heat production in the body.

(iii) Direct sunlight contains UV radiations from the Sun, which aid in the death of mold spores present in the air. As a result, it is recommended that every living room in the house receive direct sunlight at least for a short time.

(iv) Incisors are used for biting and cutting of food. Canines are used for holding and tearing food.

(v)

Food being digested	**End-products of digestion**
Starch	Maltose
Proteins	Small peptides and amino acids
Fats	Glycerol and fatty acids

Solution 5

(i) External ear and tip of the nose.

(ii) Perspiration can be caused even when it is intensely cold outside when the temperature of the body rises due to strenuous physical activity, fever, and sickness (hypertension or high blood pressure).

(iii) We inhale air that is rich in oxygen and low in carbon dioxide, and we exhale air that is low in oxygen and rich in carbon dioxide. As a result, the statement 'We breathe in oxygen and expel carbon dioxide' is incorrect.

(iv) <u>Methods of controlling flies:</u> *(Any two)*

- Elimination of breeding places of flies.
- Spraying houses and breeding places of flies with DDT and other insecticides.
- Covering and protecting the food so that flies do not sit on food.

(v)

(a) The given diagram is of phloem tissue because the cells show cellular contents unlike the xylem tissue which contains hollow cells without any cellular contents.

(b) 1 →Sieve cell
2 →Phloem parenchyma cell
3 →Companion cell
4 →Sieve plate

(c) The phloem is a food-conducting tissue and is likely to be found in the leaves and stems of plants to carry the food manufactured in the leaves to various parts of the plant.

Solution 6

(i) Hygiene is defined as the science and practice of maintaining good health.

(ii) Functions of the Red Cross: *(Any two)*

1. To extend relief and help the victims of any calamity — fire, flood, famine, earthquakes etc.
2. To procure and supply blood for the victims of war and other calamities.
3. To educate people in accident prevention.
4. To arrange for ambulance service in all emergencies.

(iii) Broken glass utensils cannot be degraded by microorganisms. Hence, they are classified as non-biodegradable waste. To prevent the glass pieces from accumulating in the environment, these should be disposed of in deep trenches. Broken glass pieces can be utilised in the glass industry after melting.

(iv) Differences between an organ and an organelle:

Organ	Organelle
1. Visible to naked eyes and bigger in size.	1. Microscopic and cannot be seen with the naked eyes.
2. Present in different parts of the body.	2. Found within the cell.

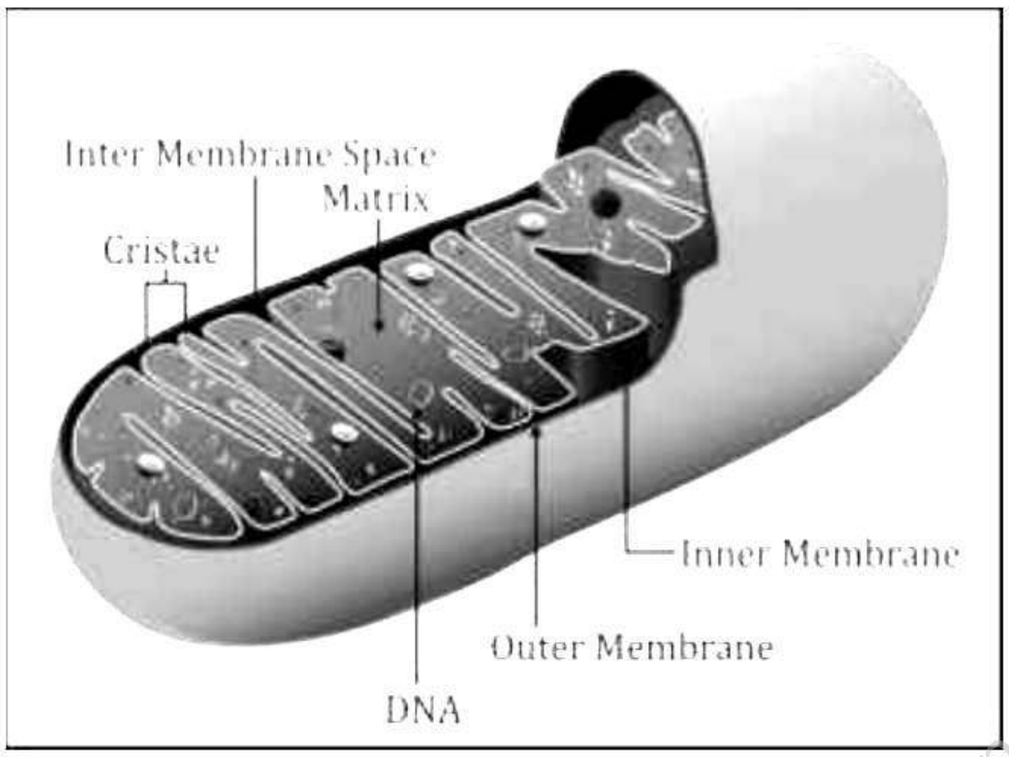
(v)

Type of muscle	Location
1. Skeletal muscle	Biceps
2. Smooth muscle	Intestines and stomach
3. Cardiac muscle	Heart

Solution 7

(i) The androecium of pea flower is diadelphous because the filaments of anthers are united in two bundles. Nine out of ten filaments in the pea plant form a staminal tube. The tenth filament is free.

(ii) <u>Structure of a mitochondrion:</u>



(iii) <u>Endospermic (albuminous) seeds</u> — Castor, Maize, Poppy.
<u>Non-endospermic (exalbuminous) seeds</u> — Bean, Gram, Pea.

(iv) <u>Respiration is said to be the reverse of photosynthesis because of the following reasons:</u>

- During respiration, organic food is broken down into its inorganic components, carbon dioxide and water. During photosynthesis, organic food is synthesised from its inorganic components, carbon dioxide and water.
- Carbon dioxide is released during respiration but consumed during photosynthesis.

(v) People from different countries and languages must be able to read about each other's research in science. As a result, it was vital to minimise any potential confusion caused by local names. Certain universal laws govern the creation of scientific names. They are distinct and can be used to identify organisms all around the planet. As a result, scientific names for living things are preferred over their colloquial names.

Solution 8

(i) Bacteria are the most primitive, unicellular organisms that lack a well-defined nucleus. Their genetic material is in the form of a single chromosome dispersed in the cytoplasm without a nuclear membrane. They do not possess complex membrane-bound cell organelles such as chloroplasts, endoplasmic reticulum, and mitochondria, indicating a simpler cellular organisation.

(ii) Food that has been sealed or canned may not always be safe to eat as it may contain harmful bacteria like *Clostridium botulinum*, which may cause serious food poisoning resulting in botulism. In extreme cases, this condition may even prove to be fatal for life.

(iii) <u>Uses of antibiotics:</u> *(Any two)*

- They find a wide use in medicine to fight infections.
- Certain antibiotics are used as food preservatives to preserve fresh meat and fish.
- Some antibiotics are used to treat animal feed to prevent internal infections.
- Some antibiotics are used for controlling plant pathogens.

(iv) Vitamins are used in their original form by the cells. They do not require digestion. They are either water soluble or fat soluble, hence no enzyme is required to digest vitamins. They are absorbed directly from the digestive tract, transported by the blood to the cells, and the cells absorb and use them whenever they need.

(v) Some joints, such as the shoulder and knee, must be held firmly in place to be properly lubricated. Such joints contain synovial fluid, a lubricating (loosening) fluid that acts as a cushion between the bones, reducing friction during movement. As we age, the movement of our joints becomes stiffer and less flexible as the synovial fluid decreases and the cartilage thins. Furthermore, when ligaments shorten and lose flexibility, joints become stiffer.