

Sample Paper 02
ICSE Class X 2024-25
BIOLOGY
Science Paper - 3

Time: 2 Hours

Max. Marks: 80

General Instructions:

1. Answer to this Paper must be written on the paper provided separately.
 2. You will not be 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.
 5. Section A is compulsory. Attempt any four questions from Section B.
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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 questions, write the correct answer only.)

- (i) A plant cell may burst when :
- (a) Turgor pressure equalities wall pressure
 - (b) Turgor pressure exceeds wall pressure
 - (c) Wall pressure exceeds turgor pressure
 - (d) None of the above
- (ii) Forests contribute in bringing rain by
- | | |
|---------------|-------------------|
| (a) bleeding | (b) transpiration |
| (c) guttation | (d) all of them |
- (iii) **Assertion (A):** A mixed nerve contains both sensory and motor fibers.
Reason (R): Mixed nerves are responsible for transmitting both sensory signals to the brain and motor signals from the brain to muscles.
- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
 - (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
 - (c) Assertion (A) is true, but Reason (R) is false.
 - (d) Assertion (A) is false, but Reason (R) is true.
- (iv) The prime source of chlorofluorocarbons is :
- | | |
|-------------------------|------------------------------|
| (a) Vehicular emissions | (b) Industrial effluents |
| (c) Domestic sewage | (d) Refrigeration equipments |

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- (v) SA node is called the pacemaker of the heart because
- (a) it generates the cardiac impulse
 - (b) it conducts the impulse from AV node
 - (c) it is present in the right atrium
 - (d) it is made up of specialised muscle fibers
- (vi) Identify the major cause of population explosion from those given below
- (a) High natality rate
 - (b) Literacy
 - (c) Low natality rate
 - (d) None of these
- (vii) **Assertion (A):** Hypersecretion of adrenal cortex causes Cushing's syndrome.
Reason (R): Symptoms of Cushing's syndrome are obesity, hyperglycemia, weakness, osteoporosis, salt and water retention.
- (a) Both Assertion and Reason are true
 - (b) Both Assertion and Reason are false
 - (c) Assertion is true and Reason is false
 - (d) Assertion is false and Reason is true
- (viii) Radhika studied the plant tissues and made the following table:

Tissue	Function
P	Transports water and minerals.
Q	Transports food.

Identify the correct pair.

- (a) P – Xylem, Q – Phloem
 - (b) P – Phloem, Q – Xylem
 - (c) P – Cambium, Q – Xylem
 - (d) P – Xylem, Q – Cambium
- (ix) Which of the following glands is known as master gland ?
- (a) Adrenal glands
 - (b) Kidneys
 - (c) Pancreas
 - (d) Pituitary
- (x) Which of the following is not true for the process of ovulation in human ?
- (a) The egg is released from Graafian follicle
 - (b) The fertilised egg passes out of female's body
 - (c) The egg is fertilised in Fallopian tube
 - (d) The egg passes through fimbriated funnel of Fallopian tube
- (xi) Which of these structures, involved in cell division, is present in animal cells but not higher plant cells ?
- (a) Centriole
 - (b) Centromere
 - (c) Chromatid
 - (d) Chromosome
- (xii) **Assertion (A):** A neuron comprises a cell body, dendrites, and an axon.
Reason (R): The cell body contains the nucleus, dendrites receive signals, and the axon transmits impulses.
- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
 - (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
 - (c) Assertion (A) is true, but Reason (R) is false.
 - (d) Assertion (A) is false, but Reason (R) is true.

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- (xiii) **Assertion:** Imbibition involves the absorption of water molecules by living or dead plant cells through their hydrophilic surfaces.
Reason: When seeds germinate, the seed coat breaks due to the imbibition pressure.
- (a) both assertion and reason are true and reason is the correct explanation of assertion.
(b) both assertion and reason are true, but reason is not the correct explanation of assertion.
(c) assertion is true but reason is false.
(d) both assertion and reason are false.
- (xiv) A duplicated chromosome has ----- chromatids
- (a) One (b) Two
(c) Three (d) Four
- (xv) A teacher asked her students to name two organs that are part of both the digestive and respiratory systems.
Raj said: Pharynx and Larynx
Sonu said: Trachea and Lungs
Lata said: Pharynx and Mouth
Abhay said: Lungs and Diaphragm
Who were correct?
- (a) Raj and Lata (b) Lata and Abhay
(c) Sonu and Raj (d) Raj and Sonu

QUESTION 2.

- (i) Name the following:
- (a) The thin membranous sac serving as the reservoir of urine.
(b) The condition of a cell when it is kept in a hypotonic solution.
(c) Any two animals having 19 pairs of chromosomes.
(d) The hormone which increases blood glucose level.
(e) The region of distinct vision in the eye.
- (ii) Fill in the blanks with suitable words:
The site of light reaction in the cells of a leaf is (a) The chemical substance used to test the presence of starch in the cell of a leaf is (b) Stroma is the ground substance in.....(c)..... dark reaction of photosynthesis is known as (d) in the flowering plants, food is transported in the form of (e)
- (iii) 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.
- (a) Fibrin, Platelets, Thromboplastin, Fibrinogen, Thrombin.
(b) Cochlea, Malleus, Pinna Stapes, Incus.
(c) Receptor, Spinal cord, Effector, Motor neuron, Sensory neuron.
(d) Uterus, Parturition, Fertilization, Gestation, Implantation.
(e) Caterpillar, Snake, Owl, Frog, Green leaves.

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- (iv) Read the explanations given below and name the structure:

Example: The substance that gives blood its red color.

Answer: Hemoglobin.

- (a) The organ responsible for absorbing nutrients from food.
 (b) The small structures in the lungs where gas exchange takes place.
 (c) The structure in plants that provides support.
 (d) The process by which the body eliminates waste.
 (e) The cells in the body that fight infections.
- (v) Match the items given in column I with the most appropriate ones in column II and rewrite the correct matching pairs:

Column I		Column II	
(a)	Autosomes	(1)	Collect deoxygenated blood from the wall of the heart
(b)	Movement of water	(2)	Xylem
(c)	Bacteria and fungi	(3)	Chromosome other than the pair of sex chromosomes
(d)	2,4-D and 2,4,5-T	(4)	Eradication of weeds
(e)	Coronary veins	(5)	decomposers

SECTION - B

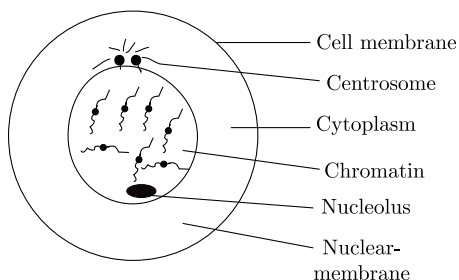
(Attempt any four questions.)

QUESTION 3.

- (i) What is a gene ?
 (ii) The figure shows two types of chromosomes. Identify them and give reason for your choice.



- (iii) The term 'stem cells' are often heard these days. Explain briefly of what it means.
 (iv) The given figure shows a cell. Study the figure and then answer the questions that follow :
 (a) Identify the stage of cell cycle depicted by the cell.
 (b) Write any two characteristics of this phase.



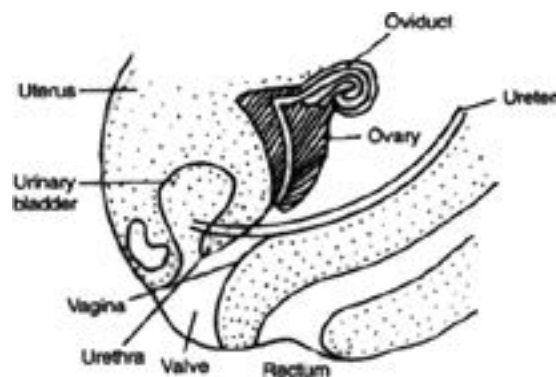
- (v) Define the following :
- (a) Genome
 - (b) Alleles
 - (c) Punnett square

QUESTION 4.

- (i) What is colostrums ?
- (ii) Give logic for why insulin is injected into the body of a highly diabetic patient and not given orally ?
- (iii) 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)

Organ	Sympathetic system	Parasympathetic system
e.g., Lungs	Dilates bronchi and bronchioles	Constricts bronchi and bronchioles
1. Heart		
2. Pupil of the eye		

- (iv) What is the significance of amniotic fluid ?
- (v) Suresh is studying the female reproductive system in his biology class and comes across a diagram representing its organs. Help Suresh apply his knowledge to answer the following questions:



- (a) Name the fully developed part of ovary containing the ovum.
- (b) Name the organ of the female body in which the fetus develops.
- (c) Name the part homologous to penis of male.

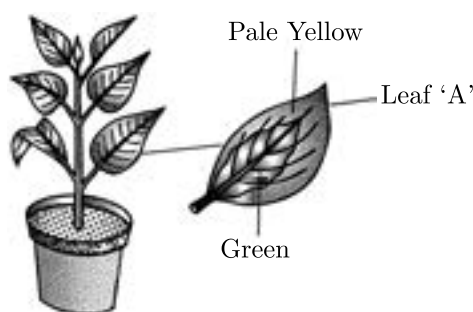
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QUESTION 5.

- (i) What is photolysis ?
- (ii) (a) Give two examples of turgor movements in plant.
(b) Give two examples of semi-permeable membrane, other than cell membrane.
- (iii) Auxins and Gibberellins induce growth in plants. Which hormone has inhibitory effect on growth ?
- (iv) A well watered potted plant shows wilting of leaves on hot sunny day. Explain the reason.
- (v) Potato cubes 1 cm in size were placed in two containers, one containing water, the other containing concentrated sugar solution. After about 24 hours when the cubes were examined, then those placed in water were found to be firm and had increased in size by a few millimeters. Those placed in concentrated sugar solution were found to be soft and had decreased in size. Use the above information to answer the questions that follow :
 - (a) Account for the firmness and increase in size of the potato cubes which were placed in water.
 - (b) Account for the softness and decrease in size of the potato cubes which were placed in the sugar solution.
 - (c) Name and define the physical process being investigated in this experiment.

QUESTION 6.

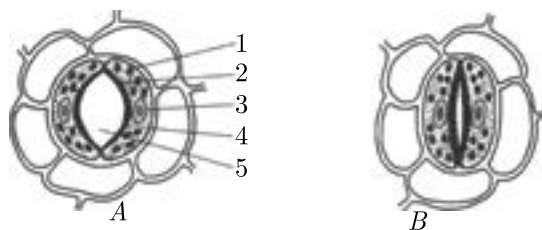
- (i) What is the function of eyelashes ?
- (ii) Name the type of cell division that occurs during :
 - 1. Growth of shoot.
 - 2. Formation of pollen grains.
 - 3. Repair of worn out tissues.
- (iii) A potted plant with variegated leaves was taken in order to prove a factor necessary for photosynthesis. The potted plant was kept in the dark for 24 hours and then placed in bright sunlight for a few hours. Observe the diagrams and answer the questions.



- (a) What aspect of photosynthesis is being tested in the above diagram?
- (b) Represent the process of photosynthesis in the form of a balanced equation.

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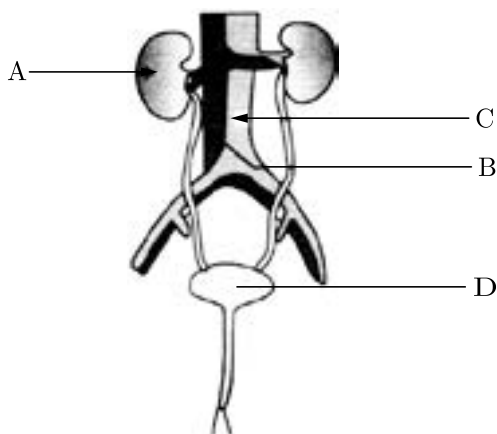
- (iv) Explain sex-determination in human beings by giving schematic diagram.
- (v) Following are the diagrams of a certain structure in plants in two conditions:



- (a) Name the structure shown.
- (b) Name the parts numbered 1-5.
- (c) What is the most apparent difference between *A* and *B* in the structure shown?

QUESTION 7.

- (i) What is Rh-factor?
- (ii) When did Cro – Magnon man appear? State the distinguishing features of them.
- (iii) How is heart protected from shocks and jerks?
- (iv) What factors govern the growth of population?
- (v) Raju is reviewing a diagram of the human excretory system in his biology class. Help him apply his understanding to answer the following:

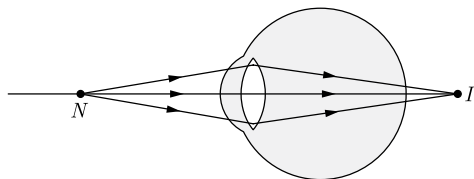


- (a) Identify the labels *A*, *B*, and *C*.
- (b) Name the basic filtration unit present in the kidney.
- (c) Structure which stores urine until it is passed out.

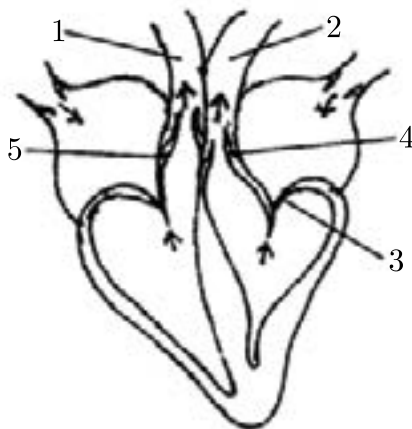
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QUESTION 8.

- (i) Give biological reasons for On sprinkling common salt on grass growing in a lawn, the grass is killed.
- (ii) Which part of the human ear gives 'Dynamic balance' and 'Static balance' to the body ?
- (iii) The diagram given below represents a defect of vision of the human eye :



- (a) Draw a neat labelled diagram to show how this defect can be rectified.
- (b) What is the nature of this image that falls on the retina of a normal eye ?
- (iv) State any two harmful effects of acid rain.
- (v) The diagram below represents the human heart in one phase of its functions.



- (a) Name the phase.
- (b) Which part of the heart is contracting in this phase ? Give a reason to support your answer.
- (c) Name the parts labelled 1 to 4.
