ICSE 2025 EXAMINATION

Sample Question Paper - 8

BIOLOGY

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.

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

Answer: (a) Turgor pressure equalities wall pressure

(ii) Forests contribute in bringing rain by
(a) bleeding (b) transpiration
(c) guttation (d) all of them

Answer: (b) transpiration

(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.

Answer: (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(iv) The prime source of chlorofluorocarbons is :
(a) Vehicular emissions (b) Industrial effluents
(c) Domestic sewage (d) Refrigeration equipment's

Answer: (d) Refrigeration equipment's

(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

Answer: (a) it generates the cardiac impulse

(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

Answer: (a) High natality rate

(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

Answer: (a) Both Assertion and Reason are 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

Answer: (a) P – Xylem, Q – Phloem

(ix) Which of the following glands is known as master gland ?
(a) Adrenal glands
(b) Kidneys
(c) Pancreas
(d) Pituitary

Answer: (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

Answer: (b) The fertilised egg passes out of female's body

(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

Answer: (a) Centriole

(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.

Answer: (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(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.

Answer: (b) both assertion and reason are true, but reason is not the correct explanation of assertion.

(xiv) A duplicated chromosome has ---------- chromatids
(a) One (b) Two
(c) Three (d) Four

Answer: (b) Two

(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

Answer: (a) Raj and Lata

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.

Answer:

(a) Urinary bladder
(b) Turgid
(c) Lion and tiger
(d) Glucagon
(e) macula/Fovea/yellow spot

(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) ..... Strom a 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) .....

Answer:

(a) Grana
(b) iodine solution
(c) chloroplast
(d) Calvin cycle
(e) sucrose

(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.

Answer:

(a) Platelets, Thromboplastin, Fibrinogen, Thrombin, Fibrin
(b) Pinna, Malleus, Incus, Stapes, Cochlea
(c) Receptor, Sensory neuron, Spinal cord, Motor neuron, Effector
(d) Fertilization, Implantation, Gestation, Parturition, Uterus
(e) Green leaves, Caterpillar, Frog, Snake, Owl

(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.

Answer:

(a) Small intestine
(b) Alveoli
(c) Stem
(d) Excretion
(e) White blood cells

(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

Answer:

Column I		Column II	
(a)	Autosomes	(3)	Chromosome other than the pair of sex chromosomes
(b)	Movement of water	(2)	Xylem
(c)	Bacteria and fungi	(5)	decomposers

(d)	2,4-D and 2,4,5-T	(4)	Eradication of weeds
(e)	Coronary veins	(1)	Collect deoxygenated blood from the wall of the heart

SECTION – B

(Attempt any four questions.)

QUESTION 3.

(i) Name two animals which have nineteen pairs of chromosomes.

Answer: Lion, Tiger

(ii) What is a pure strain and how it is different from a hybrid strain ?

Answer:

A pure strain, also known as a homozygous strain, consists of individuals that have two identical alleles for a particular trait. In a pure strain, the alleles are the same, which can be represented as TT (homozygous dominant) or tt (homozygous recessive). These strains are often used in genetic research and breeding programs to study specific traits and create new varieties.

A hybrid strain, also known as a heterozygous strain, consists of individuals that have two different alleles for a particular trait.

In a hybrid strain, the alleles are different, represented as Tt (heterozygous). Hybrid strains are often created by crossing two different pure strains, and they can exhibit a variety of traits that are intermediate between the two parent strains. Hybrid strains are often used in agriculture to create new varieties of crops with desirable traits, such as increased yield, disease resistance, or improved flavor.

(iii) What is synapsis?

Answer:

1. **Definition of Synapsis**: Synapsis refers to the process of pairing homologous chromosomes during cell division, specifically in meiosis.

2. **Occurrence in Meiosis**: This process occurs during the first stage of prophase I of meiosis, which is a type of cell division that reduces the chromosome number by half and leads to the formation of gametes.

3. **Specific Stage**: Synapsis takes place during the second stage of prophase I, which is known as the zygotene stage.

4. **Function of Synapsis**: The primary function of synapsis is to allow the matching of homologous chromosome pairs. This matching is crucial for the subsequent processes of segregation and crossing over.

5. **Importance of Homologous Pairing**: By pairing homologous chromosomes, synapsis facilitates genetic recombination through crossing over, which increases genetic diversity in the resulting gametes.

6. **Conclusion**: In summary, synapsis is the pairing of homologous chromosomes that occurs during the zygotene stage of prophase I in meiosis, allowing for genetic recombination and proper segregation of chromosomes.

(iv) Why did Mendel select garden pea for his experiments?

Answer: Mendel selected pea plants for his experiment because of the following reasons :

1. A pea plant has many contrasting characters.
2. Self-fertilization takes place in pea plants and so it is possible to get a pure line of traits.
3. Flowers are bisexual and hermaphrodite. Therefore, cross-pollination is achieved easily.

(v) Define the following :
(a) Genetics
(b) Genetic engineering
(c) Genes

Answer: (a) Genetics:

1. It is the branch of science that deals with the study of genetic variation genes, and heredity.
2. Gregor Johann Mendel is called the “Father of Modern Genetics” for his discoveries on the basic principles of heredity.

3. Genetics provides an explanation for how variations in DNA sequence cause specific characteristics or traits to be transferred from parents to children.
4. A gene is a section of DNA that has the instructions needed to create one or more molecules that support bodily function.
5. Modern genetics mainly focuses on the chemical substance that genes are made of, known as deoxyribonucleic acid, or DNA, and the ways in which it affects the chemical reactions that are constituents in the living processes within the cell.

QUESTION 4.

(i) What are the three major parts of a developing embryo ?

Answer: Embryonic disc, amnion and yolk sac.

(ii) Given below are name of certain hormones secreted by various parts of a mammalian reproductive system. Write down the site of their secretion.

(a) Testosterone
(b) Progesterone
(c) Relaxin
(d) Oestrogen

Answer:

(a) **Testosterone** – Secreted by the **Leydig cells** in the **testes** (in males).

(b) **Progesterone** – Secreted by the **corpus luteum** in the **ovaries** (in females), and also by the **placenta** during pregnancy.

(c) **Relaxin** – Secreted by the **corpus luteum** in the **ovaries** and the **placenta** (during pregnancy).

(d) **Oestrogen** – Secreted primarily by the **granulosa cells** in the **ovaries** (in females), and also by the **placenta** during pregnancy.

(iii) The statement given below is incorrect. Rewrite the correct statement by changing the underlined words of the statement.

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

Answer: The Graafian follicle, after ovulation turns into a hormone producing tissue called corpus luteum.

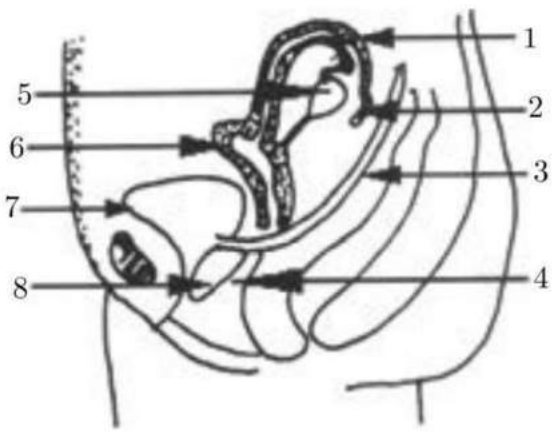
(iv) What are the differences between hormones and enzymes?

Answer:

Enzymes: Enzymes are secreted by duct glands and transported to the target place via ducts.
Enzymes are primarily related to digestion and are produced by the pancreas.

Hormones: Hormones are released by ductless glands and delivered directly into the bloodstream.
Hormones are secreted by the thyroid, pancreas, adrenal glands, and pituitary.

(v) Suresh studied a diagram of the female reproductive system for his biology exam which is shown below-



(a) Label the parts indicated by guidelines 1-8.
(b) What happens to the uterus if fertilisation takes place?

Answer:

(a) 1 - Oviduct;
2 Funnel of oviduct;
3- Ureter;
4 - Vagina;
5- Ovary;
6 - Uterus;
7- Urinary bladder;
8 - Urethra.

(b) The wall of uterus thickens and is supplied with blood capillaries.

QUESTION 5.
(i) What are thylakoids?

Answer: Thylakoids:

1. Thylakoids are the flattened sacs used as sites of photochemical or light-dependent reactions of photosynthesis.
2. It contains chlorophyll, a green pigment for absorbing energy from sunlight.
3. Thylakoids are membrane-bound cell organelle found inside chloroplasts of the plant cell.

(ii) Give two examples of turgor movements in plants.

Answer: Examples of turgor movements in plants:

1. The rapid drooping of the leaves of the sensitive plant (Mimosa pudica) is an outstanding example of turgor movement.
2. If one of the leaves is touched, even lightly, the leaflets fold up, and within 2 to 3 seconds, the entire leaf droops. If the leaf is touched somewhat strongly, the wave of folding and drooping spreads from the stimulated leaf to all neighbouring leaves.
3. Slowly, the leaves recover and again stand erect. In this plant, the stimulus of touch leads to loss of turgor at the base of the leaflets and at the base of the petioles, called pulvinus.
4. Somewhat similar turgor movements are found in insectivorous plants, whose leaves close up to entrap a living prey.
5. The bending movements of certain flowers towards the sun and the sleep movements of the leaves of certain plants at night are also due to turgor movements.

(iii) What are stomata ?

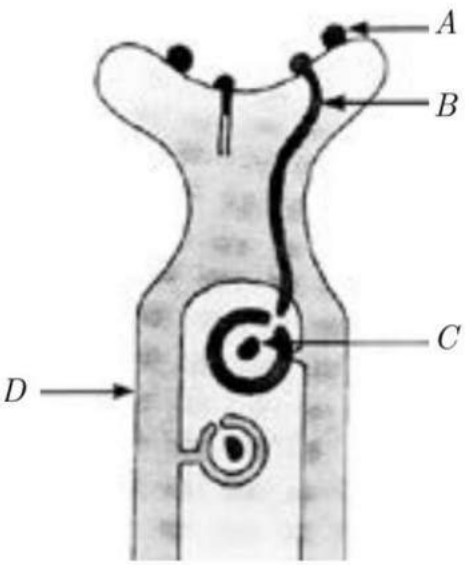
Answer: Stomata are tiny openings or pores found primarily on the lower surface of leaves. They are surrounded by specialized cells known as guard cells.

(iv) Distinguish between Respiration and Photosynthesis.

Answer:

	Photosynthesis		Respiration
1.	Carbon dioxide is used up and oxygen is released.	1.	Oxygen is used up and carbon dioxide is released.
2.	Photosynthesis occurs in plants and some bacteria.	2.	Respiration occurs in all living organisms.
3.	Photosynthesis results in the of dry weight of the plants.	3.	Respiration results in loss of dry weight of the plants.
4.	Glucose is produced, which is utilized by the plants.	4.	Glucose is broken down to obtain energy.
5.	The raw materials for photosynthesis are water, carbon dioxide and sunlight.	5.	The raw material for respiration is glucose.

(v) The figure represents an example of a plant movement. Study it and answer the following:



(a) What is shown in the figure?
(b) Define the process.
(c) Mark the parts A, B, C and D.

Answer:
(a) Chemotropism

(b) The movement of plant organs in response to chemicals. The sugar present in the stigma stimulate the growth of pollen tube through the style towards the ovule.

(c) A – Pollen grain B – Pollen – Tube
C – Female Gamete D – Ovary

QUESTION 6.

(i) Name the central hole of the iris through which light enters the eye.

Answer: Pupil

(ii) Given below is diagram representing a stage during mitotic cell division. Study it carefully and answer the questions that follow:

(a) Name the stage that follows the one shown here. How is that stage identified?

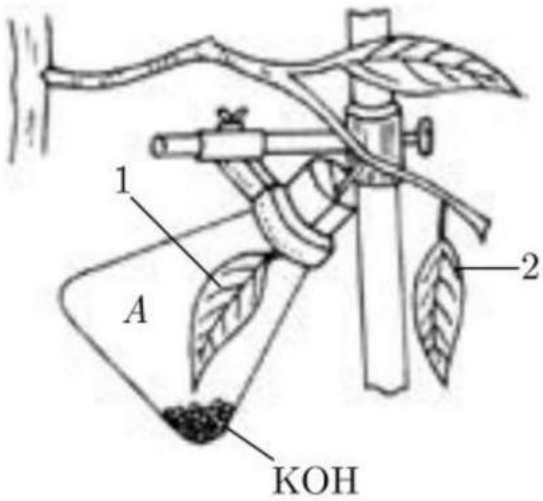
(b) How will you differentiate between mitosis and meiosis on the basis of the chromosome number in the daughter cells?

Answer: **(a) Metaphase:** Chromosomes arrange themselves upon the equator of a spindle.

(b) Mitosis - 46 chromosomes
Meiosis - 23 chromosomes

(iii) The figure given below represents an experiment to demonstrate a particular aspect of photosynthesis. The alphabet 'A' represents a certain condition inside the flask.

(a) What is the aim of the experiment ?



Answer: Carbon dioxide is necessary for photosynthesis.

(b) Identify the special condition inside the flask.

Answer: KOH absorbs all CO, from the flask and the leaf gets no CO, for photosynthesis.

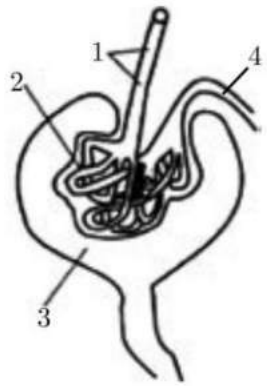
(iv) Before performing starch test on leaf, it is boiled. Why?

Answer: Boiling a leaf before the starch test serves two crucial purposes:

1. Chlorophyll Removal: The green pigment chlorophyll masks the color change that indicates the presence of starch. Boiling the leaf in alcohol dissolves and removes the chlorophyll, leaving the leaf colorless. This allows for a clear observation of the iodine solution's reaction with starch.
2. Cell Wall Softening: Boiling also softens the leaf's cell walls, making them more permeable.

This facilitates the penetration of the iodine solution into the cells, ensuring a thorough reaction with any starch present.

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



(a) Name the region in the kidney where the above structure is present.

(b) Name the parts labelled 1, 2, 3 and 4.

(c) Name the stages involved in the formation of urine.

Answer: (a) Cortex of the kidney

(b) 1. Afferent arteriole
2. Glomerulus
3. Bowman's capsule
4. Efferent arteriole

(c) Ultrafiltration, tubular reabsorption and tubular secretion.

QUESTION 7.

(i) What is the birth place of human beings ?

Answer: Africa.

(ii) Study the skull of human ancestor and answer the following.

(a) Identify the figure.

(b) State the features of the figure.

Answer: (a) Australopithecus.

(b) They had a flat nose, strongly projecting lower jaw, their brain size was less than 500cc. Their canine teeth was reduced in size. They showed bipedalism.

(iii) Write difference between Auricle and Ventricle?

Answer:

1. The Ear-shaped pouch inside the atrium of the heart is referred to as the **auricle.**

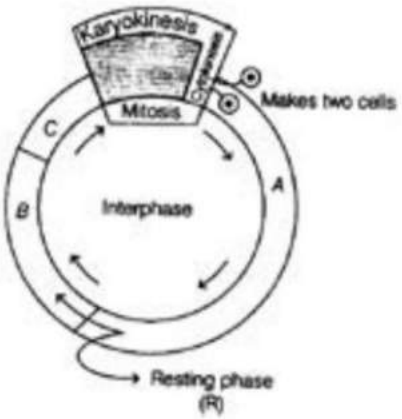
2. The muscular lower chamber that pumps out the blood from the heart is referred to as the **ventricle.**

Auricle	**Ventricle**
1. In molluscs the upper chamber of the heart is the auricle.	1. In molluscs, the lower chamber of the heart is the ventricle.
2. This is the wrinkled, flap-shaped structure of the atrium in humans.	2. The lower chambers of the heart are two ventricles in humans.
3. It consists of a thin wall and is less muscular.	3. It is more muscular as compared to auricles.
4. Its function is to collect blood from the body.	4. Its function is to pump blood to the respective parts of the body.

(iv) What is census?

Answer: The counting of the country's population conducted every 10 years in India is called Census.

(v) Suresh was reviewing the cell cycle diagram for his upcoming biology exam. Given below is a diagram representing the cell cycle. Study the diagram and answer the questions that follows.



(a) A B and C also arrange them in sequence of all cycle stages.

(b) Which is considered as the longest stage of cell cycle?

(c) What happen in the phase, C of cell cycle?

Answer:

a) A, B, and C represent the following stages of the cell cycle:

- **A:** Mitosis
- **B:** Interphase
- **C:** Resting Phase

b) The longest stage of the cell cycle is Interphase.

c) In phase C (Resting Phase), the cell is not actively dividing. It is in a non-dividing state.

QUESTION 8.

(i) Name the vascular tissues which conduct water and translocate food.

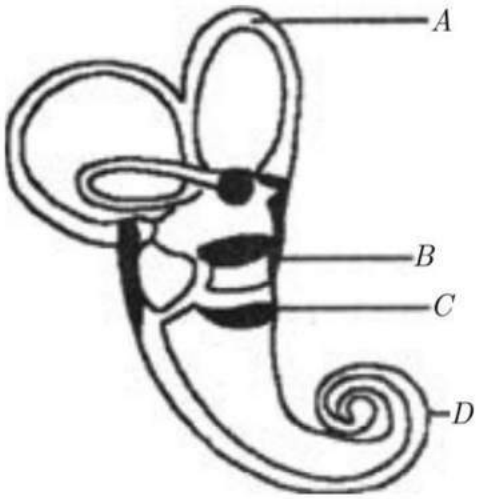
Answer:

- Xylem – Conducts water.
- Phloem – translocate food.

(ii) What is meant by power of accommodation ? Name the muscles of the eye responsible for the same.

Answer: The process of focusing the eye at different distances is called the power of accommodation. The ciliary muscles are responsible for the power of accommodation

(iii) The diagram below represents the structure found in the inner ear. Study the same and then answer the questions that follow :



(a) Name the parts labelled A, B, C and D.
(b) Name the part of the ear responsible for transmitting impulses to the brain.

Answer: a) Naming the Labeled Parts:

- A: Cochlea
- B: Organ of Corti
- C: Semicircular canals
- D: Eustachian tube

(b) The vestibulocochlear nerve is responsible for trans mitting impulses from the ear to the brain.[1] It is also known as the auditory nerve.

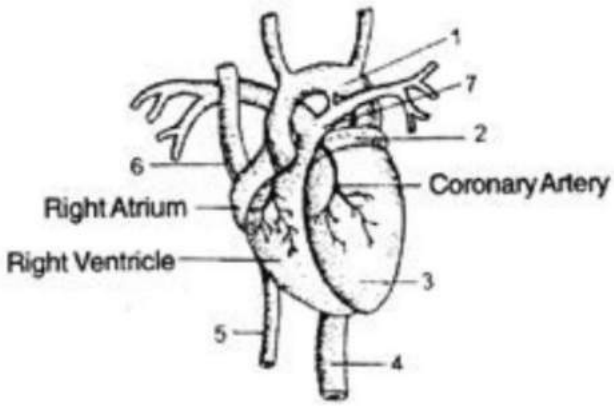
(iv) State any two harmful effects of acid rain.

Answer: Here are two harmful effects of acid rain:

1. Damage to Forests: Acid rain leaches essential nutrients like calcium and magnesium from the soil, making it difficult for trees to absorb water. It also releases aluminum, which is toxic to plants. This weakens trees and makes them more susceptible to diseases, pests, and harsh weather conditions.

2. Damage to Buildings and Monuments: Acid rain reacts with the materials used in buildings and monuments, causing them to deteriorate. Limestone, marble, and metal structures are particularly vulnerable. This can lead to significant damage to historical and cultural landmarks.

(v) Given below is a diagram of the external features of the heart.



(a) Name the parts 1 to 4.
(b) What happens if the coronary artery gets an internal clot?
(c) What type of blood does 5 carry?

Answer: (a) 1. Aorta
2. Left atrium
3. Left ventricle
4. Dorsal aorta
5. Inferior vena cava
6. Superior vena cava
7. Pulmonary artery.

(b) If the coronary artery gets an internal clot, the corresponding part of the heart does not get its blood supply. This will result in loss of contraction or even death of the cardiac cells resulting in a heart attack or coronary arrest which may prove to be fatal.

(c) Part '5' which is the inferior vena cava carries deoxygenated blood which is rich in CO_2 and metabolic wastes.