

# ICSE SEMESTER 2 EXAMINATION

## SAMPLE PAPER - 5

### BIOLOGY

#### (SCIENCE PAPER 3)

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*Maximum Marks: 40*

*Time allowed: One and a half hours*

*Answers to this Paper must be written on the paper provided separately.*

*You will not be allowed to write during the first 10 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.*

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*Attempt **all** questions from **Section A** and **any three** questions from **Section B**.*

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#### SECTION A

*(Attempt **all** questions.)*

#### Section-A (Attempt all questions)

##### Question 1.

**Name the following by choosing the correct answers to the questions from the given options. (Do not copy the question, write the correct answer only.)**

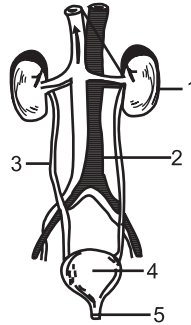
- (i) Which of the following is not an excretory organ in human?  
(a) Lungs                      (b) Kidney                      (c) Mouth                      (d) Sweat glands.
- (ii) Organ of Balancing of sound is:  
(a) Peripheral vestibular system                      (c) Tympanic membrane  
(b) Acoustic meatus                      (d) Eustachian tube
- (iii) White blood cells are also called:  
(a) Erythrocytes                      (b) Leukocytes                      (c) Thrombocytes                      (d) Monocytes
- (iv) Natural Reflex is:  
(a) Voluntary reflex                      (c) Inborn reflex  
(b) Experimental reflex                      (d) Differs in different individuals
- (v) When lens of eye becomes foggy it cause:  
(a) Astigmatism                      (c) Cataract  
(b) Glaucoma                      (d) Amblyopia
- (vi) Which hormone promote the release of carbohydrate, fats and protein in human body?  
(a) Androgen                      (b) Calcitonin                      (c) Thymopoietin                      (d) Cortisol
- (vii) The range of blood platelets count in normal adult is:  
(a) 200,000 to 450,000 per cu. mm                      (c) 250,000 to 400,000 per cu. mm  
(b) 250,000 to 450,000 per cu. mm                      (d) 200,000 to 400,000 per cu. mm
- (viii) Bowman's capsule and Glomerulus are together known as:  
(a) Proximal capsule                      (c) Secondary capsule  
(b) Malpighian capsule                      (d) None of these

- (ix) Regulation of blood supply in muscle is function of which hormone:  
 (a) Oxytocin (b) Thyroxine (c) Adrenaline (d) Insulin
- (x) White matter mainly composed of:  
 (a) Myelinated Dendrites (c) Myelinated Axons  
 (b) Myelinated Nerve cell bodies (d) Unmyelinated Axons

## Section-B (Attempt any three questions from this section)

### Question 2.

- (i) Name the organ which produce urea. What is osmoregulation?  
 (ii) Who discovered ABO blood group and Rh factor?  
 (iii) Given below is the diagram of an excretory system. Label the parts numbered 1, 2, 3, 4, and 5.



- (iv) Briefly describe chambers of heart.

### Question 3.

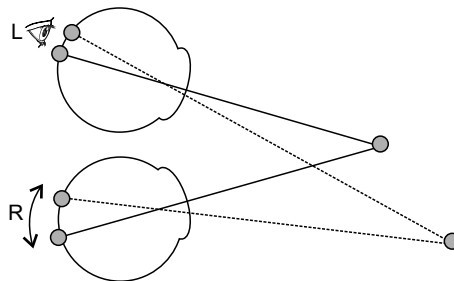
- (i) Which neurotransmitters are used to communicate within the autonomic nervous system?  
 (ii) Which hormone is secreted by pancreas?  
 (iii) Differentiate between Motor nerve and sensory nerve.  
 (iv) Draw labeled diagram of human brain with atleast 6 labels.

### Question 4.

- (i) What is insulin and how is it produced?  
 (ii) What is fibrin? Describe its functions.  
 (iii) Draw well labeled diagram of artery and veins. (At least 3 level).  
 (iv) Describe term dialysis and reason of doing dialysis.

### Question 5.

- (i) Differentiate between exocrine gland and endocrine gland.  
 (ii) Describe the functions of semi-circular canal, Utriculus and saccules.  
 (iii) Explain the figures:



- (iv) Describe conditional reflex.

**Question 6.**

- (i) Write the full form of:
- (a) LH (b) GH
- (ii) Describe the function of :
- (a) Macula: ..... (b) Cochlea: .....
- (iii) Briefly define Blood pressure.
- (iv) Fill in the blank:

Source gland cells	Hormone produce
Beta cells of Islets of Langerhans	(a).....
(b).....	Thyroxine
(c).....	Growth hormone



## Section-A

**Answer 1.**

- (i) (c) Mouth

**Explanation :**

Excretion in humans is done through sweat glands, lungs, kidney organs. Mouth is not an excretory organ.

- (ii) (a) Peripheral vestibular system

**Explanation :**

The peripheral vestibular system is organ of balance. The peripheral vestibular system is responsible for maintaining balance, coordinating the position of the head and eye movement. The system consists of sacs filled with endolymph, with the fibres of the vestibulocochlear nerve distributed on the walls of these sacs.

- (iii) (b) Leukocytes

**Explanation :**

White blood cells are also called leukocytes because *leuko* means white. WBCs contain nucleus but do not contain haemoglobin.

- (iv) (c) It is Inborn reflex

**Explanation :**

It is one in which no previous experience or learning is acquired. This is inborn reflex. Example- Blinking, coughing, sneezing, swallowing.

- (v) (c) Cataract

**Explanation :**

A cataract develops when the lens in your eye, which is normally clear, becomes foggy. For your eye to see, light passes through a clear lens. The lens is behind your iris. The lens focuses the light so that your brain and eye can work together to process information into a picture. When a cataract clouds over the lens, your eye can't focus light in the same way. This leads to blurry vision or other vision loss (trouble seeing).

- (vi) (d) Cortisol

**Explanation :**

Cortisol hormone controls the metabolism of carbohydrate, fat and protein in the blood. It promotes the glycogenesis in the liver. It helps in maintain blood pressure and blood glucose (sugar) level.

- (vii) (d) 200,000 to 400,000 per cu. mm

**Explanation :**

Blood platelets are minute oval or round structure, non-nucleated, floating in blood. These are about 200,000 to 400,000 per cu. mm. of blood in an adult.

(viii) (b) Malpighian capsule

**Explanation :**

Bowman's capsule and Glomerulus together called as Malpighian capsule or just renal capsule.

(ix) (c) Adrenaline

**Explanation :**

Adrenaline increases the blood supply to the muscle while decreasing it to skin and visceral organ.

(x) (c) Myelinated Axon

**Explanation :**

White matter is the tissue present at the centre of the brain. It is light in colour because of lipid(fatty substance) present in the myelin. It majorly composed of myelinated Axon. It is important because it allows messages to pass quickly between different area of gray matter. White matter continue to develop and peak in middle age.

## Section-B

### Answer 2.

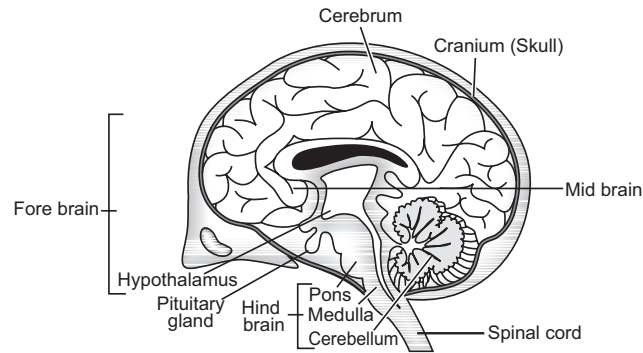
- (i) Kidney is the organ where urea is produced. The kidney while removing urea from blood also regulate its composition *i.e.*, the percentage of water and salts. This function is called osmoregulation.
- (ii) ABO blood group system discovered by Karl landsteiner. Rh factor was discovered by Karl landsteiner and Wiener.
- (iii) 1- kidney, 2-Aorta, 3-Ureter, 4-Urinary bladder, 5- Sphincter
- (iv) The heart consists of four chamber- two atria on upper side and two ventricles on lower side. The atria also called auricles have thinner walls because their major function is to receive blood from the body and pump it into the very next ventricles. The ventricles have thick muscular walls because they have to pump blood to lungs and other body organs.

### Answer 3.

- (i) The two neurotransmitters (Chemical Messengers) are used to communicate within the autonomic nervous system are **Acetylcholine and Noradrenaline (Norepinephrine)**.
- (ii) Pancreas as an endocrine gland secretes three hormone:
  - I. Insulin- regulates blood sugar level.
  - II. Glucagon- convert glycogen to glucose.
  - III. Somatostatin- regulates assimilation process.

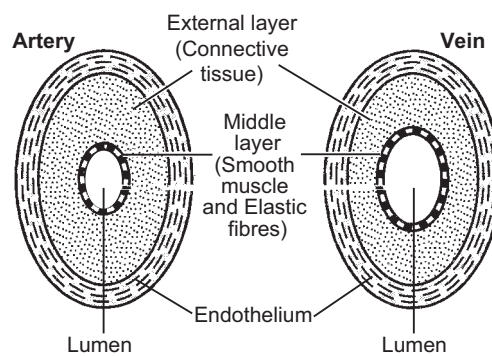
(iii)	Sensory nerves	Motor nerves
	Contain only sensory fibers.	Contain only motor fibers.
	Bringing impulses from the receptors to the brain or spinal cord.	Carrying impulses from the brain or spinal cord to effector organs to bring them on action.
	Example- Optic nerve arising from the eye and ending in the brain.	Example- a nerve arising from the brain and supplying the muscle of the eyeball for rotations.

(iv)



**Answer 4.**

- (i) Insulin is a protein chain or peptide hormone produced by the beta cells of the pancreatic islets of Langerhans and it is considered to be the main anabolic hormone of the body. It regulates the metabolism of carbohydrates, fats, and proteins by promoting absorption of glucose from the blood into liver.
- (ii) Thrombin in the presence of calcium ions, reacts with the soluble fibrinogen of the plasma to convert it into insoluble fibrin. Fibrin is a solid substance that forms threads. These microscopic threads of fibrin are sticky and form a network at the wound.
- (iii) Diagram of artery and vein:



- (iv) When both kidneys of a person are damaged or removed, then we use an artificial kidney called a dialysis machine. A dialysis machine works as an artificial kidney. The patient's blood is led from the radial artery in his arm through the machine where urea and excess salts are removed, and the purified blood is returned to a vein in the same arm. In case of permanent damage to the kidneys, dialysis is required to be repeated for about twelve hours a week.

**Answer 5.**

- |     |  |   |
|-----|--|---|
| (i) |  |   |
|     | Endocrine or internally secreting gland. They lack excretory ducts.              | Exocrine Gland are duct glands. They have excretory ducts.        |
|     | They secrete products called hormones directly into the blood vessel.            | They secrete their products, hormones into the a duct.            |
|     | Example- pituitary gland, thymus gland, parathyroid gland and adrenal gland etc. | Example- Lactic gland, Sweat gland, Mucous gland, Salivary gland. |
- (ii) Semicircular canals detect rotational head movements. Utriculus and saccules detect changes in the position of the head relating to gravity (linear acceleration) and head tilts on horizontal and vertical planes.
  - (iii) Stereo vision is the computation of depth based on the binocular disparity between the images of an object in left and right eyes (Figure). This requires matching up features in the two eyes, that is, identifying features in the left and right retinas that are both images of the same point in the visual scene.

- (iv) Ivan Petrovich Pavlov (I. P. Pavlov) is Russian scientist who given term “Conditional reflex” also know as Acquired Reflex. Conditional reflex is one which develops during lifetime due to experience or learning. It is involuntary, spontaneous automatic response brought about due to a previously learned experience. Example familiar tasty food resulting in watering of mouth.

**Answer 6.**

- (i) (a) LH - Luteinizing Hormone  
(b) GH - Growth Hormone
- (ii) (a) The most sensitive part of the retina is a small area called the macula, which has millions of tightly packed photoreceptors (called cones). The high density of cones in the macula makes the visual image detailed, just as a high-resolution digital camera has more megapixels.  
(b) Sound vibrations when they enter the ear it gets converted to vibration after eardrum. This vibration causes vibration in fluid which is present inside cochlea.
- (iii) Blood pressure is the pressure which the blood flowing through the arteries exerts on their walls. When blood is pushing through the artery due to contraction of the heart called systolic pressure. When this pressure is at lower point is called diastolic pressure. The normal blood pressure of the adult is 100-140mm (systolic) and 60-80 mm (diastolic). A rise in blood pressure above 140/90 is known as hypertension.
- (iv) (a) Insulin  
(b) Follicular cell  
(c) Anterior lobe of the pituitary gland

