

ICSE SEMESTER 2 EXAMINATION  
**SAMPLE QUESTION PAPER**  
**SOLUTIONS**  
**BIOLOGY**  
**(SCIENCE PAPER 3)**

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**SECTION A**

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**Answer 1**

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|---------|----------|-----------|---------|--------|
| (i) c.  | (ii) b.  | (iii) a.  | (iv) b. | (v) b. |
| (vi) d. | (vii) d. | (viii) c. | (ix) a. | (x) c. |

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**SECTION B**

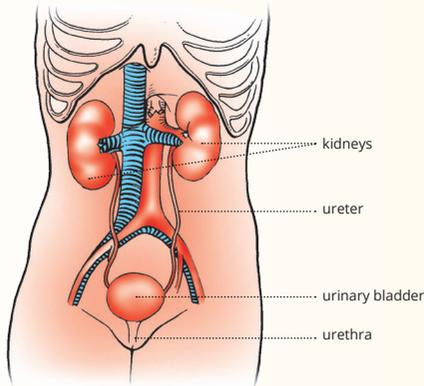
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**Answer 2**

- (i) *In our body, two adrenal glands are present, one on top of each kidney; hence, they are also called suprarenal glands. Adrenalin and noradrenalin*
- (ii) *The circulation of blood from the right ventricle to the left auricle of the heart via lungs is called pulmonary circulation. Pulmonary artery and pulmonary veins take part in pulmonary circulation.*
- (iii) a. *Veins.*  
b. *Semilunar valves.*  
c. *Semilunar valves prevent the backward flow of blood.*
- (iv) *The external ear, middle ear and cochlea help in hearing. The sacculus, utriculus and the semicircular canals help in the sense of balance.*

**Answer 3**

- (i) a. *Hepatic veins: From liver*  
b. *Hepatic portal veins: From intestine, pancreas and spleen*
- (ii) *Left auricle receives oxygenated blood from lungs through pulmonary veins and left ventricle pumps oxygenated blood to aorta.*
- (iii)



The human urinary system

- (iv) *The name of the process is ultrafiltration. Walls of glomerular capillaries and Bowman's capsule are very thin and semipermeable in nature. Hence they act as 'ultrafilters'. The glomerular hydrostatic pressure or capillary pressure is the main driving force that tends to move fluid out of the glomeruli. Due to high filtration pressure in the blood of glomerulus, a part of water and dissolved constituents are filtered out in the Bowman's capsule. This process is termed as ultrafiltration.*

#### Answer 4

- (i) Persons with blood group O are called universal donors. Persons with blood group AB are called universal recipients.
- (ii) Two characteristics of hormone:
- Hormones are regulatory chemicals that are secreted by endocrine glands directly into the blood.
  - They act only on target organs or cells located away from their sources.
- (iii) Three functions of thyroxine:
- It regulates basal metabolism by stimulating rate of cellular oxidation, resulting in energy production and maintenance of body temperature.
  - It regulates general growth of the body, ossification of bones and mental development.
  - It regulates activities of the nervous system.
- (iv) Differences between blood and lymph.

	<b>Blood</b>	<b>Lymph</b>
(i)	Blood is red in colour due to the presence of haemoglobin in erythrocytes	Lymph is colourless, as it lacks haemoglobin containing erythrocytes
(ii)	Blood consists of plasma, erythrocytes, leucocytes and platelets	Lymph consists of plasma and leucocytes only
(iii)	Flow of blood is fairly rapid	Flow of lymph is very slow

#### Answer 5

- (i) Two examples of reflex action:
- Immediate withdrawal of hand, if suddenly pricked by a thorn or after touching a hot object.
  - Watering of mouth (salivation) at the sight of tasty food.
- (ii) In myopia, a person cannot see distant objects clearly, because either the eyeball is elongated or the lens has become too thickened or curved but in hypermetropia the person cannot see nearby objects clearly due to shortening of the eyeball or the lens has become too thin.
- (iii) 1. Cochlea  
2. Semicircular canals  
3. Vestibular apparatus (ampulla, utricle, saccule)
- (iv) Endocrine glands secrete hormone. These are also called ductless glands because they do not have their own ducts, and their secretions are directly released into the tissue space next to them from where these are carried by the blood to the target organ.  
Examples: pituitary, thyroid, parathyroid, adrenal

#### Answer 6

- (i) The eye focuses an image by refracting, or bending the light rays using cornea and the lens. An upside down or inverted image is formed at the yellow spot on the retina.
- (ii) a. **ACTH:** ACTH is Adrenocorticotropic Hormone. It is secreted from anterior pituitary gland and it stimulates the adrenal cortex to secrete steroid hormones called glucocorticoids.  
b. **GTH:** GTH is Gonadotropic hormone. It is secreted from anterior pituitary gland and its function is to control the growth and development of gonads.
- (iii) a. Insulin  
b. Pituitary  
c. Oxytocin
- (iv) Meninges are protective coverings of the brain which consist of three layers:
- The outer tough, protective layer dura mater
  - The middle arachnoid layer
  - The inner thin, transparent and highly vascular layer is the pia mater