

BIOLOGY

(SCIENCE PAPER 3)

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.

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

The intended marks for questions or parts of questions are given in brackets [ ].

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.) [10]

- (i) Which part of human ear converts sound vibrations into electrical signals?
  - (a) Hammer
  - (b) Stirrup
  - (c) Tympanic membrane
  - (d) Cochlea
- (ii) Sphygmomanometer measures
  - (a) Pulse rate
  - (b) Heart beat
  - (c) Blood pressure
  - (d) Brain activity
- (iii) The size of aperture of the pupil of one eye is controlled by:
  - (a) Iris
  - (b) Retina
  - (c) Cornea
  - (d) Conjunctiva

- (iv) How are neurons structurally adapted to chemically transmit impulses to neighbouring neurons?
- (a) The trigger zone is near the cell body.
  - (b) Axon terminals contain neurotransmitter substances within synaptic vesicles.
  - (c) Sodium ions is higher on the outside of its membrane and of potassium ions is higher on the inside.
  - (d) Schwann cells surround axons.
- (v) The reason why the right kidney is slightly lower than the left is
- (a) the left kidney is bigger than right
  - (b) considerable space occupied by the heart
  - (c) considerable space occupied by the liver on the right side
  - (d) the right kidney is bigger than the left
- (vi) This is not an endocrine gland.
- (a) Adrenal
  - (b) Pituitary
  - (c) Lacrimal
  - (d) Thyroid
- (vii) Transparent biconvex crystalline body located just behind the pupil.
- (a) Cornea
  - (b) Lens
  - (c) Retina
  - (d) Iris
- (viii) A vein that starts with capillaries and ends in capillaries
- (a) Portal vein
  - (b) Superior venacava
  - (c) Inferior venacava
  - (d) Hepatic portal vein
- (ix) In the ABO system, blood group 'O' is characterized by the
- (a) presence of antigen O
  - (b) presence of both antigen A and antigen B
  - (c) absence of both antigen A and antigen B
  - (d) presence of antigen A and absence of antigen B
- (x) Hyposecretion from adrenal cortex causes
- (a) Cushing's syndrome
  - (b) Turner's syndrome
  - (c) Addison's disease
  - (d) Exophthalmic goitre

**SECTION B**

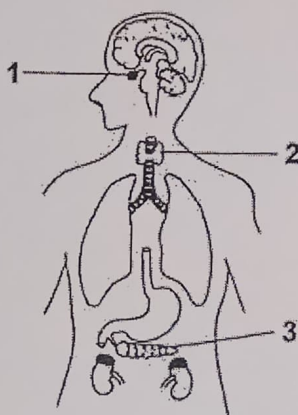
(Attempt any three questions from this Section.)

**Question 2**

- |       |  |     |
|-------|--|-----|
| (i)   | Explain any two abnormal constituents in urine.          | [2] |
| (ii)  | Who discovered blood grouping system? What are antigens? | [2] |
| (iii) | Explain the three functions of Spinal cord.              | [3] |
| (iv)  | State any three characteristics of vein.                 | [3] |

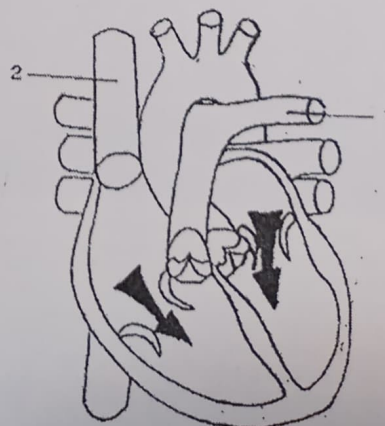
**Question 3**

- |       |   |     |
|-------|---|-----|
| (i)   | What is meningitis? Name the 3 meninges of the brain?           | [2] |
| (ii)  | Give the location of SAN and AVN node?                          | [2] |
| (iii) | Draw a neat and labelled diagram of cross section of an artery. | [3] |
| (iv)  | Label the parts numbered 1, 2 and 3 in the diagram given below. | [3] |



**Question 4**

- |       |  |     |
|-------|--|-----|
| (i)   | Name the hormones secreted by the posterior lobe of pituitary. Name the deficiency disorder that causes frequent and copious urination.                | [2] |
| (ii)  | Define the following terms:  | [2] |
|       | (a) Reflex action  |     |
|       | (b) Excretion  |     |
| (iii) | Draw a neat diagram of nephron and label any two parts.  | [3] |
| (iv)  | The diagram given alongside represents the human heart in one phase of its functional activities. Study the same and answer the questions that follow: |     |
|       | (a) Name the phase.  | [3] |
|       | (b) Label the parts 1 and 2.   |     |
|       | (c) What is joint diastole?  |     |



**Question 5**

- (i) Why does renal cortex appear to be dotted while renal medulla has a striped appearance? [2]
- (ii) Where are aortic semilunar valves located? What is its function? [2]
- (iii) Explain any three general properties of hormones. [3]
- (iv) Rahul has difficulty reading the blackboard while sitting in the last row. [3]
  - (a) Which defect could he be suffering from?
  - (b) What is the cause of this defect?
  - (c) Name the lens used to correct this defect.

**Question 6**

- (i) Distinguish between rods and cones based on the location and pigment. [2]
- (ii) What does plasma consist of? Explain serum. [2]
- (iii) Name the hormone responsible for: [3]
  - (a) Reabsorption of water from kidney tubules.
  - (b) Breakdown of glycogen in the liver
  - (c) Milk secretion
- (iv) Complete the following table: [3]

Categories of WBC's	Features (In terms of nucleus only)
Basophils	(a)
(b)	Nucleus with 3-4 lobes
Eosinophils	(c)

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