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ISC Specimen 2011 Biology Paper 1 (Theory)

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BIOLOGY**Paper 1****(THEORY)****(Botany and Zoology)***(Three hours)*

*(Candidates are allowed additional 15 minutes for **only** reading the paper.
They must **NOT** start writing during this time)*

Answer **all** questions in Part I and **five** questions in Part II, choosing **three** questions from Section A and **two** questions from Section B.

All working including rough work, should be done on the same sheet as, and adjacent to, the rest of the answer.

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

PART I

Answer **all** questions

Question 1

- (a) Mention *one* significant difference between each of the following: [5]
- (i) Vaccination and Sterilization.
 - (ii) Renin and Rennin.
 - (iii) Aeroponics and Hydroponics.
 - (iv) Yellow Spot and Blind Spot.
 - (v) Collenchyma and Sclerenchyma
- (b) Give reasons for the following: [5]
- (i) Nerve impulses on a neuron travel only in one direction.
 - (ii) Erythrocytes perform anaerobic respiration only.
 - (iii) Endosperm in Castor seed is triploid.
 - (iv) Man can live without food for several days but cannot live without oxygen for even a few minutes.
 - (v) Transpiration is a necessary evil.

(c) Give scientific terms for the following: [3]

- (i) Removal of pituitary gland.
- (ii) The kind of conduction of nerve impulse along a myelinated nerve fibre.
- (iii) Morphological or physiological changes in an organism either due to genetic or environmental reasons.
- (iv) Stiffening of muscles after death.
- (v) Failure of seed to germinate even in the presence of necessary favourable environmental conditions.
- (vi) Surgical removal of part of an oviduct.

(d) Mention the most significant function/role of the following: [3]

- (i) Heparin.
- (ii) Pons varoli.
- (iii) Leydig cells.
- (iv) Nostoc.
- (v) Leghaemoglobin.
- (vi) Mast cells.

(e) State the best-known contribution of the following Scientists: [2]

- (i) Julius Sach.
- (ii) Robert Hill.
- (iii) Ronald Ross.
- (iv) Blackman.

(f) Elaborate the following: [2]

- (i) NMEP
- (ii) BCG
- (iii) NMR
- (iv) SCID

PART II
SECTION A

Answer any three questions.

Question 2

- (a) Describe the Histogen theory. [4]
- (b) Describe the development of the male gametophyte in angiosperms. [4]
- (c) What are fleshy fruits ? Explain with the help of an example. [2]

Question 3

- (a) Discuss the major events in Calvin cycle. [4]
- (b) Describe the carbonic acid exchange theory for absorption of mineral salts in plants. [3]
- (c) Give the differences between photoperiodism and vernalisation. [3]

Question 4

- (a) Draw a neat and fully labelled diagram of the Vertical Section of the human eye. [4]
- (b) Describe the ABO system of blood groups. [4]
- (c) Give four differences between *Sympathetic and Parasympathetic* Nervous System. [2]

Question 5

- (a) Describe the events that take place during the ovulatory and secretory phase of menstrual cycle. [4]
- (b) Explain the cause and symptoms of following: [3]
- (i) Uremia.
- (ii) Jaundice.
- (iii) Gout.
- (c) Name the 10th, 11th and 12th cranial nerves and write their functions. [3]

Question 6

- (a) Before the proteins can enter the blood stream, they need to be processed. Describe the treatment received by proteins in the alimentary canal. [4]
- (b) Explain the stomatal movements based on K^+ ion transport mechanism. [4]
- (c) Define regeneration. Explain reparative regeneration. [2]

SECTION B

Answer any two questions

Question 7

- (a) Give an account of the Oparin – Haldane theory of Origin of life. [4]
- (b) How can one justify that Cromagnon man could have been the direct ancestor of man of today? [4]
- (c) Write two disadvantages of using pesticides. [2]

Question 8

- (a) Write two uses of each of the following: [4]
- (i) *Azadirchta*.
- (ii) *Cinchona calisaya*.
- (iii) *Ocimum sanctum*.
- (iv) *Withana somnifere*.
- (b) Explain Integrated Pest Management. [4]
- (c) What is *ultrasound imaging*. Give one use of ultrasound imaging. [2]

Question 9

- (a) Write a short note on AIDS, its transmission and control measures. [4]
- (b) What are stem cells? Why have stem cells become so important these days? [3]
- (c) Explain three causes of mental illness. [3]

Question 10

- (a) What are the general activities of community health services? [4]
- (b) What are the reasons for drug addiction. [4]
- (c) Write one symptom each of - [2]
- (i) Down syndrome.
 - (ii) Filariasis.