ICSE Board
Class X Biology
Board Paper 2012
(One hour and a half)

General Instructions: **Total Marks: 80**

1. Answers to this paper must be written on the paper provided separately.
*2. You will **not** be allowed to write during the first **15** minutes.*
This time is to be spent in reading the question paper.
3. The time given at the head of the paper is the time allotted for writing the answers.
*4. Attempt **all** questions from **Section I** and **any four** questions from **Section II**.*
5. The intended marks of questions or parts of questions are given in brackets [ ].

SECTION I (40 Marks)

*Attempt **all** questions from this section.*

Question 1

(a) Choose the correct option from the following:

(i) BCG vaccine is used to build immunity against
(A) Poliomyelitis
(B) Tuberculosis
(C) Malaria
(D) Whooping cough

(ii) The part of the human eye where rod and cone cells are located is the
(A) Retina (B) Cornea
(C) Choroid (D) Sclera

(iii) A plant is kept in a dark cupboard for 48 hours before conducting any experiment on photosynthesis to
(A) Remove starch from the plant.
(B) Ensure that starch is not translocated from the leaves.
(C) Remove chlorophyll from the leaf of the plant.
(D) Remove starch from the experimental leaf.

(iv) NADP is expanded as
(A) Nicotinamide Adenosine Dinucleoside Phosphate
(B) Nicotinamide Adenine Dinucleotide Phosphate
(C) Nicotinamide Adenine Dinucleolus Phosphate
(D) Nicotinamide Adenosine Dinucleolus Phosphate

(v) A reflex arc in man is best described as the movement of stimuli from
(A) Receptor cell, sensory neuron, relaying neuron, effector muscles
(B) Receptor cell, efferent nerve, relaying neuron, muscles of the body
(C) Receptor cell, spinal cord, motor neuron, relaying neuron
(D) Receptor cell, synapse, motor neuron, relaying neuron [5]

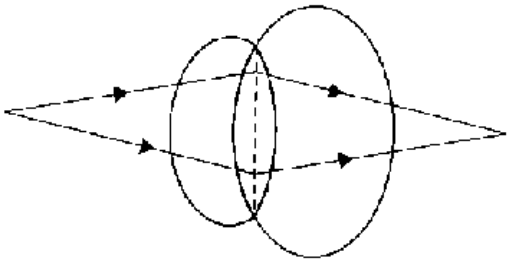
(b) Name the following:

(i) Chemical substances produced by microorganisms which kill or inhibit the growth of other microorganisms.
(ii) Hormone which helps to increase the reabsorption of water from the kidney tubules.
(iii) Phase of cardiac cycle in which the auricles contract.
(iv) Organ where urea is produced.
(v) Phenomenon by which living or dead cells absorb water by surface attraction. [5]

(c) Give the exact location of the following:

(i) Lenticels
(ii) Prostate gland
(iii) Thyroid gland
(iv) Centrosome
(v) Mitral valve [5]

(d) Study the diagram given below and answer the questions which follow. The diagram is depicting a defect of the human eye.



(i) Identify the defect shown in the diagram.
(ii) Give two possible reasons for the above defect.
(iii) Draw a neat labelled diagram to show how the above defect can be rectified. [5]

(e) State the function of the following:

(i) Chordae tendineae
(ii) Lymphocytes
(iii) Seminiferous tubules
(iv) Thylakoids
(v) Beta cells of pancreas [5]

(f) Given below are sets of five terms. Rewrite each term in the logical sequence. One example is done for you.

Example: Cortical cells, Root hair, Xylem, Soil water, Endodermis (absorption of water by plants)

Answer: Soil water, Root hair, Cortical cells, Endodermis, Xylem

(i) Active immunity, Antigen, Antibody, Bacteria, Lymphocytes (defense mechanism of the body)
(ii) Implantation, Parturition, Ovulation, Gestation, Fertilisation (stages leading to the formation of foetus and birth)
(iii) Oval window, Tympanum, Cochlea, Auditory canal, Ear ossicles (path through which vibration of sound is transferred in the human ear)
(iv) Karyokinesis, S phase, Cytokinesis, G_1 phase, G_2 phase (cell cycle)
(v) Renal vein, Renal artery, Afferent arteriole, Efferent arteriole, Glomerulus (pathway of blood through the glomerulus) [5]

(g) Given below are six sets with four terms each. In each set one term is an odd one. Identify the odd term in each set and name the category to which the remaining three belong. One example is done for you: [5]

No.	**Set**	**Odd one**	**Category**
	Cell wall, large vacuole, plastids, centrosome	centrosome	Parts of an animal cell
(i)	Cerebrum, cerebellum, thalamus, hypothalamus		
(ii)	Ovary, ureter, fallopian tube, uterus		
(iii)	Adrenal gland, liver, thyroid gland, pituitary gland		
(iv)	Malleus, pinna, incus, stapes		
(v)	Haemophilia, colour blindness, albinism, night blindness		

(h) Match the items in Column A with that of Column B. Rewrite the matching pairs. [5]

Column A	**Column B**
(1) Potometer	(a) Antiseptic
(2) Hypothalamus	(b) Disinfectant
(3) Formalin	(c) Vasectomy
(4) Contraception in males	(d) Sudden change in genes
(5) Mutation	(e) Pituitary gland
	(f) Tubectomy
	(g) Transpiration
	(h) Thyroid gland
	(i) Alleles
	(j) Photosynthesis

SECTION II [40 Marks]

*Attempt any **four** questions from this section.*

Question 2

(a) Give the biological/technical terms for the following:

(i) Membrane which allows the passage of molecules selectively.

(ii) Suppressed allele of a gene.

(iii) Structure which carries visual stimuli from the retina to the brain.

(iv) Squeezing of WBCs through the walls of the capillaries into the tissue.

(v) Protective coverings located around the human brain and spinal cord.

(vi) Defect of the eye where the eye lens loses flexibility resulting in long sightedness in elderly people.

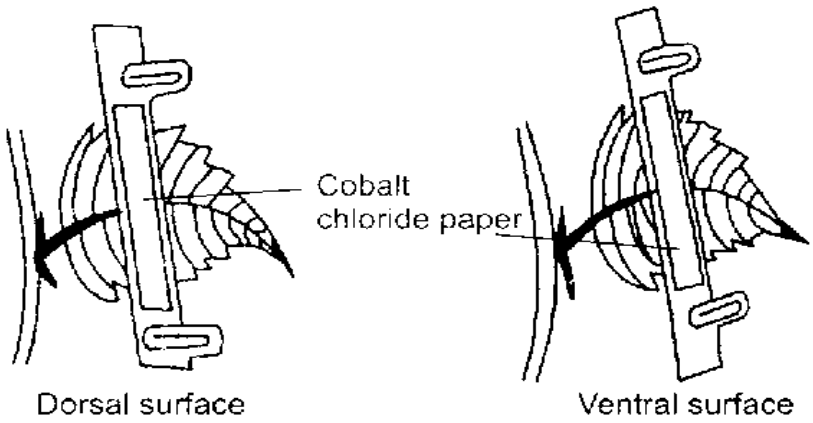
(vii) Hormones which stimulate other endocrine glands to produce their specific hormones.

(viii) Latter phase in the menstrual cycle in which the remnant of the follicle in the ovary changes to the corpus luteum.

(ix) Statistical study of the human population.

(x) Technique of artificially introducing weakened germs or germ substances into the body for developing resistance to a particular disease. [5]

(b) Given below is an experimental setup to demonstrate a particular process. Study the same and answer the questions which follow:



(i) Name the physiological process being studied.

(ii) Explain the process mentioned above.

(iii) What is the aim of the above experiment?

(iv) What would you observe in the experimental setup after an hour? Give a reason to support your answer.

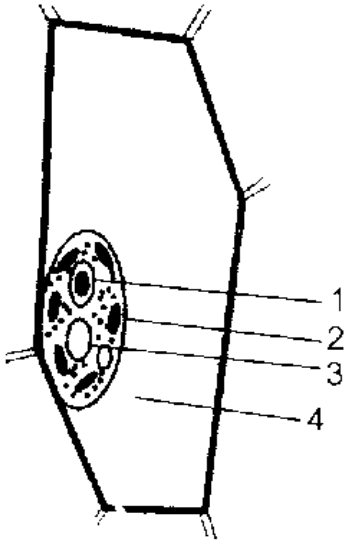
(v) Mention any three adaptations in plants to overcome the physiological process mentioned in (i) above. [5]

Question 3

(a) Differentiate between the following pairs on the basis of what is mentioned in the brackets:

(i) Natality and Mortality (definition)
(ii) Stoma and Stroma (structure)
(iii) Acromegaly and Cretinism (symptoms)
(iv) Transpiration and Guttation (structures involved)
(v) Diabetes mellitus and Diabetes insipidus (reason/cause) [5]

(b) Given below is a diagram of the cell as seen under the microscope after having been placed in a solution.



(i) What is the technical term used for the state/condition of the cell shown above?
(ii) Give the technical term for the solution in which the cell was placed.
(iii) Name the parts numbered 1 to 4.
(iv) Is the cell given above a plant cell or an animal cell? Give two reasons in support of your answer as evident from the diagram.
(v) What would you do to bring this cell back to its original condition? [5]

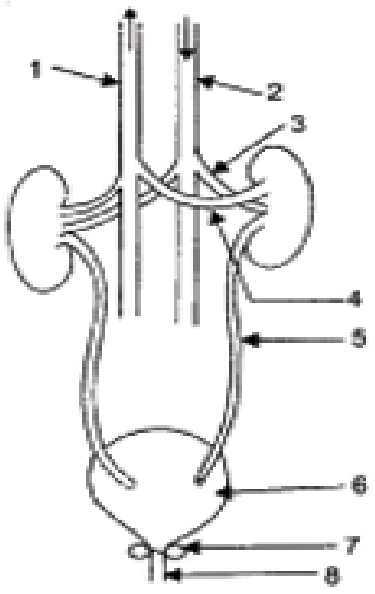
Question 4

(a) Briefly explain the following:

(i) Osmosis
(ii) Allele
(iii) Pulse
(iv) Reflex action
(v) Synapse [5]

(b) The diagram given below shows the excretory system in humans. Study the same and answer the questions.

(i) Name the parts labelled 1, 2, 3 and 4.
(ii) Give the main function of the parts labelled 5, 6, 7 and 8.



(iii) Name the endocrine gland which could be added in the diagram and state its location/position. [5]

Question 5

(a) A homozygous plant having round (R) and yellow (Y) seeds is crossed with a homozygous plant having wrinkled (r) and green (y) seeds.

(i) Give the scientific name of the plant on which Mendel conducted his hybridisation experiments.

(ii) Give the genotype of the F_1 generation.

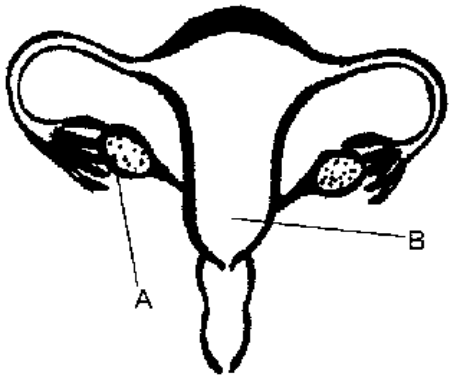
(iii) Give the dihybrid phenotypic ratio and the phenotype of the offspring of F_2 generation when two plants of the F_1 generation are crossed.

(iv) Name and state the law which explains dihybrid ratio.

(v) Give the possible combinations of gametes which can be obtained from F_1 hybrid.

[5]

(b) Study the diagram given below and answer the questions which follow:



(i) Name the part labelled A. Name any two hormones produced by part A.

(ii) What happens to the part labelled B:

(1) If fertilisation takes place.

(2) If fertilisation does not take place.

(iii) Where does fertilisation occur?

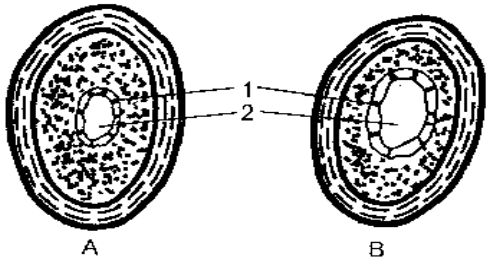
(iv) Draw a neat diagram of the human sperm as seen under high magnification and label the following parts:

(1) Acrosome

(2) Mitochondria [5]

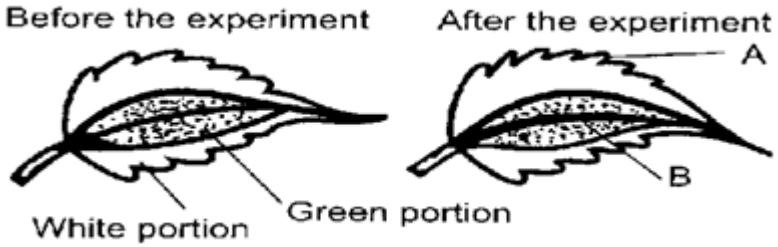
Question 6

(a) The diagram given below shows the cross-section of two kinds of blood vessels.



(i) Identify the blood vessels, A and B. In each case, give a reason to support your answer.
(ii) Name the parts labelled 1 and 2.
(iii) When are the sounds 'LUBB' and 'DUB' produced during a heartbeat?
(iv) Name the blood vessel which
(1) begins and ends in capillaries.
(2) supplies blood to the walls of the heart. [5]

(b) The diagram given below is an experiment conducted to study a factor necessary for photosynthesis. Observe the diagram and answer the questions which follow.



(i) What is the aim of the experiment?
(ii) Name the test performed on the leaf and the solution used for the test.
(iii) What type of leaf was used for the experiment? Give an example.
(iv) What is the expected result of the above test on the parts labelled A and B?
(v) Give a balanced chemical equation to represent the process of photosynthesis. [5]

Question 7

(a)

(i) Draw a well-labelled diagram to show the metaphase stage of mitosis in an animal cell having four chromosomes.

(ii) State any two reasons for population explosion in India.

(iii) Give biological reasons for the following:

(1) Pituitary gland is also known as the master gland.

(2) Gametes have a haploid number of chromosomes. [5]

(b)

(i) Draw a neat diagram of a neuron and label the following parts:

(1) Node of Ranvier

(2) Nissl's granules

(3) Cyton

(ii) Name the part of the human brain which is associated with the following:

(1) Seat of memory

(2) Coordinates muscular activity

(iii) Mention any three major activities of WHO. [5]