ICSE Board
Class X Biology
Board Paper 2009
(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) Name the following:
(i) The statistical study of the human population of a region.
(ii) The biological term given to the protective membranes of the brain.
(iii) The photosensitive pigment present in the rod cells of the retina.
(iv) The cell organelle responsible for photosynthesis.
(v) The internal layer of the eye which prevents the reflection of light. [5]

(b) State whether the following statements are true or false. If false, write the correct form of the statement by changing the **first or last word** only.
(i) The resting stage in mitosis is called interphase.
(ii) Photosynthesis occurs in all the cells of the plant.
(iii) The pituitary gland is both exocrine and endocrine in function.
(iv) Chemicals applied to spots and places to kill harmful microorganisms are called disinfectants.
(v) All voluntary actions are controlled by the cerebellum. [5]

(c) Give the specific function of the following structures found in the body of plants/animals.

(i) Hydathodes
(ii) Centrosome
(iii) Xylem
(iv) Corpus luteum
(v) Eustachian tube [5]

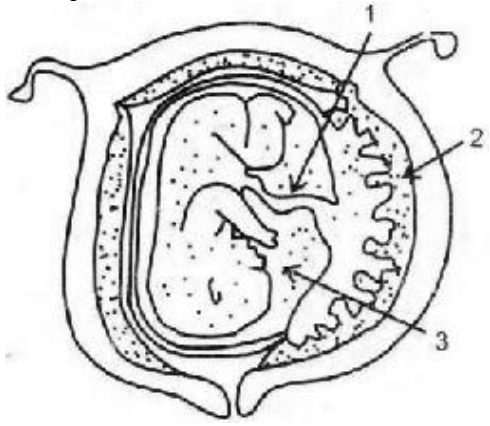
(d) Identify and name the following processes/terms from the statements given below:

(i) Movement of molecules from a region of high concentration to a region of low concentration.
(ii) Mild chemical applied on the skin to kill germs.
(iii) Chromosomes appear thread like.
(iv) The loss of water from injured parts of a plant.
(v) A pair of chromosomes carrying dissimilar alleles for a particular character. [5]

(e) Classify the following actions as simple reflex or conditioned reflex:

(i) Playing a guitar.
(ii) Removing your hand suddenly when pricked by a thorn.
(iii) Applying sudden brakes when a dog crosses your path.
(iv) Blinking of the eyelids on exposure to light.
(v) Tying one's shoe lace. [5]

(f) The diagram given below is that of a developing human foetus in the womb. Study the same and then answer the questions which follow:



(i) Name the part labelled 1.
(ii) Mention any two functions of the part labelled 2.
(iii) Explain the role played by the part labelled 3.
(iv) What is the normal gestation period (in days) of the developing foetus? [5]

(g) Explain the following terms:

(i) Natality
(ii) Photolysis in photosynthesis
(iii) Antibiotic
(iv) Root pressure
(v) Parturition [5]

(h) Given below are five statements or questions followed by four choices. Select and **rewrite** the correct answer to the given statements from the four choices given below each statement:

(i) The cerebral hemispheres in mammals are connected by the
  (i) Corpus luteum
  (ii) Hypothalamus
  (iii) Pons varolii
  (iv) Corpus callosum

(ii) Insulin is secreted by the
  (i) Beta cells of the pancreas
  (ii) Alpha cells of the pancreas
  (iii) Delta cells of the pancreas
  (iv) None of the above

(iii) A destarched plant is one whose
  (i) Leaves are free from chlorophyll
  (ii) Aerial parts are free from starch
  (iii) Leaves are free from starch
  (iv) Plant is free from starch

(iv) The onset of menstruation in a female is termed
  (i) Ovulation
  (ii) Menarche
  (iii) Menopause
  (iv) Parthenogenesis

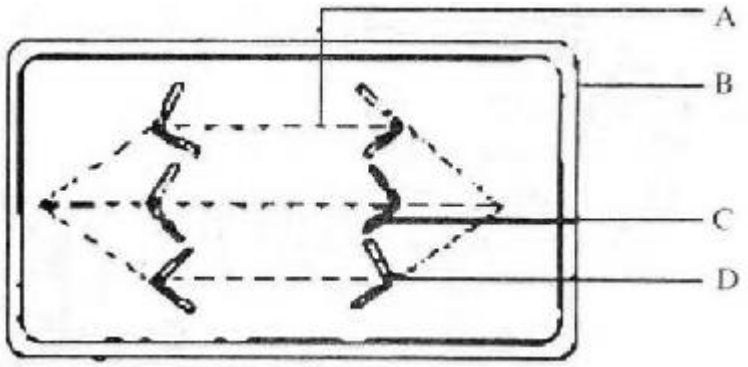
(v) BCG vaccine provides immunity against
  (i) Tetanus
  (ii) Cholera
  (iii) Tuberculosis
  (iv) AIDS [5]

SECTION II (40 Marks)

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

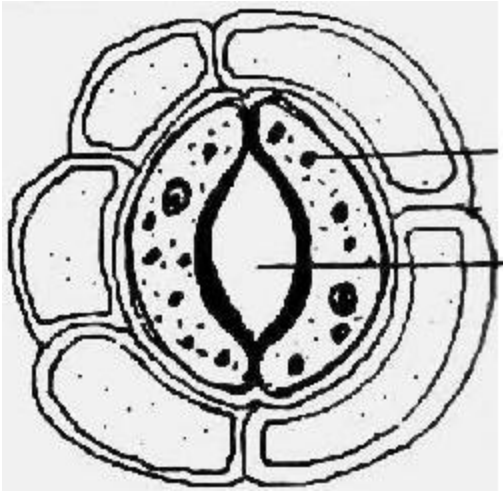
Question 2

(a) The diagram below represents a stage in cell division. Study the same and answer the questions which follow:



(i) Identify the stage of cell division.
(ii) Name the parts labelled A, B, C and D.
(iii) What is the unique feature observed in this stage?
(iv) Where does this type of cell division usually occur?
(v) How many daughter cells are formed from this type of cell division?
(vi) Is the dividing cell shown a plant or an animal cell? Give a reason to support your answer. [5]

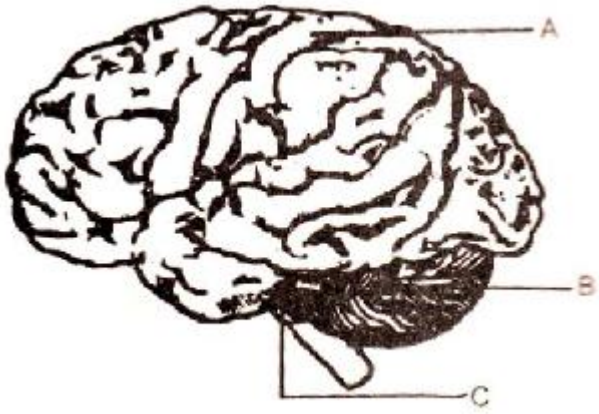
(b) The diagram below represents a structure found in a leaf. Study the same and answer the questions which follow:



(i) Name the parts labelled A and B.
(ii) What is the biological term for the above structure?
(iii) What is the function of the part labelled A?
(iv) Mention two structural features of A which help in the function mentioned in (iii) above.
(v) Where is this structure likely to be found in a leaf?
(vi) The above structure helps in the process of transpiration. Explain the term transpiration.
(vii) How many other cells are found surrounding this structure as seen in the diagram? [5]

Question 3

(a) The diagram shows a section of the human brain. Answer the questions which follow:



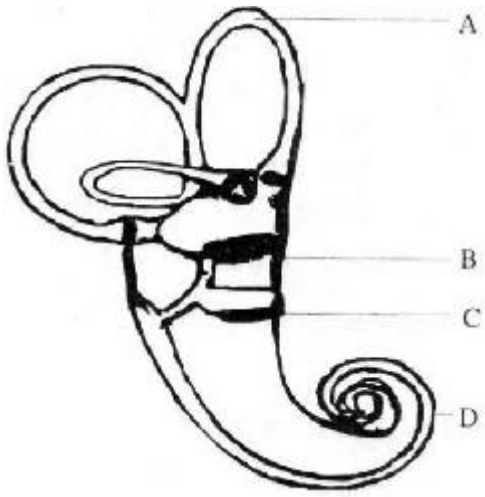
(i) Name the parts labelled A, B and C.
(ii) Give the main function of each of the parts A, B and C.
(iii) Name the three protective membranes covering the brain.
(iv) Name the basic unit of the brain. [5]

(b)

(i) Mention any three adaptations found in plants to favour the process of photosynthesis.
(ii) Why does one feel blinded for a short while on coming out of a dark room?
(iii) Explain how the rate of transpiration is affected on
1. A windy day
2. A foggy day [5]

Question 4

(a) The diagram below represents the structure found in the inner ear. Study the same and then answer the questions which follow:



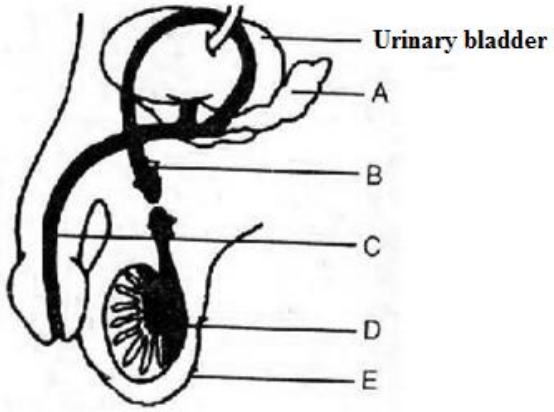
(i) Name the parts labelled A, B, C and D.
(ii) Name the part of the ear responsible for transmitting impulses to the brain.
(iii) Name the part labelled above which is responsible for
1. Static equilibrium
2. Dynamic equilibrium
3. Hearing
(iv) Name the audio receptor cells which pick up vibrations.
(v) Name the fluid present in the inner ear. [5]

(b) Name the hormone responsible for the following functions:
(i) Increase in heart beat
(ii) Maintains glucose level in the blood
(iii) Converting glycogen to glucose
(iv) Regulates basal metabolism
(v) Ossification of bones
(vi) Prepares the body during an emergency
(vii) Responsible for normal growth of the whole body
(viii) Regulates the functioning of the male and female reproductive organs
(ix) Increased reabsorption of water in the kidneys
(x) Increased blood supply to muscles [5]

Question 5

(a) The diagram below represents a surgical sterilisation method in males. Study the same and answer the questions which follow:

(i) Name the parts marked A, B, C, D and E.
(ii) Give the name of the surgical method represented in the diagram.
(iii) Which part is ligated or cut?
(iv) Name the corresponding surgical method conducted on females.
(v) Name the part which is ligated in females and why? [5]

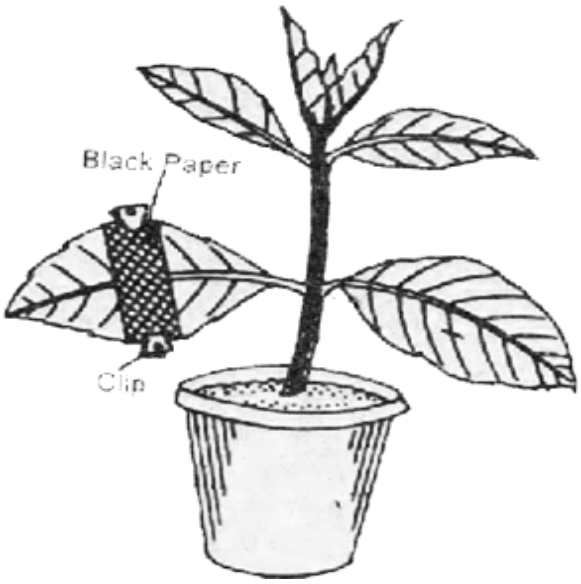


(b)

(i) Explain the following terms:
   a. Monohybrid cross
   b. Gene
   c. Phenotype
(ii) Name the two sex-linked diseases in males.
(iii) State Mendel's law of segregation. [5]

Question 6

(a) The diagram below represents an experiment conducted to prove the importance of a factor in photosynthesis. Study the same and then answer the questions which follow:

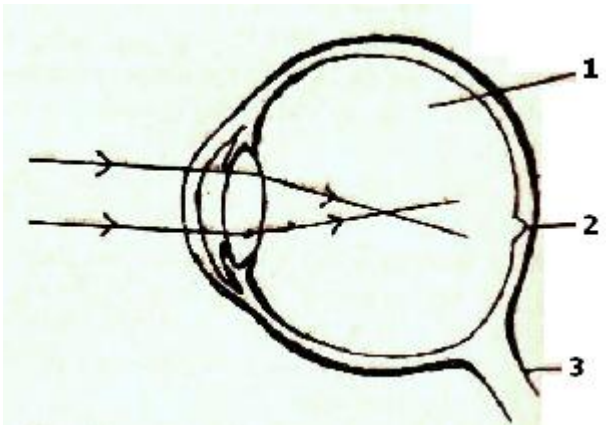


(i) Name the factor being studied in this experiment?
(ii) Why was the plant kept in a dark room before conducting the experiment?
(iii) Why was the experimental leaf then kept in
1. boiling water; 2. methylated spirit?
(iv) Name the solution used to test for the presence of starch in the leaf.
(v) What will we observe in the experimental leaf at the end of the starch test?
(vi) Give a balanced chemical equation to represent the process of photosynthesis. [5]

(b)
(i) Mention three adaptations found in plants to reduce transpiration.
(ii) Name any three germ-killing secretions of our body.
(iii) What are the age restrictions for marriage of boys and girls in India?
(iv) Mention two activities of the Red Cross. [5]

Question 7

(a) Given below is a diagram depicting a defect of the human eye. Study the same and then answer the questions which follow:



(i) Identify the defect.
(ii) Name the parts labelled 1, 2 and 3.
(iii) Give two possible reasons for this eye defect.
(iv) Draw a labelled diagram to show how the above-mentioned defect is rectified. [5]

(b) Complete the following by filling in the blanks numbered 1 to 10 with the appropriate word/term:

Photosynthesis involves a light reaction and a dark reaction. During the light reaction, the chlorophyll present in the (1) _____ gets activated by absorbing light energy. This energy splits (2) _____ molecules to (3)_____ and oxygen and releases two electrons. This process is called (4) _____. The (5) _____ ions are picked up by NADP to form (6) _____. The ADP is converted to (7) _____. This process is called (8) _____. During the dark phase, the compound produced at the end of the light reaction reacts with carbon dioxide to form (9) _____. This product is converted to starch. The process is called (10) _____. [5]