ICSE Class 10 Biology Sample Paper 3

BIOLOGY

SCIENCE Paper - 3

(Two Hours)

Answers to this paper must be written on the paper provided separately.
You will not be allowed to write during the first 15 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 doe writing the answers.

Section I is compulsory. Attempt any **four** questions from **Section II**.

Section I (40 Marks)

Attempt all questions from this section

Question 1.

(a) Name the following :
- (i) The hormone of pituitary gland which controls the activity of thyroid gland.
- (ii) A vein in the human body which carries oxygenated blood.
- (iii) The nerve that carries the impulses from brain to various tissues.
- (iv) The bacteria breaking down dead organisms to liberate nitrogen.
- (v) The number of individuals inhabiting per unit area.

(b) Mention whether the following statements are True or False. If False, rewrite the wrong statement in its correct form by changing the first or last word only.
- (i) The unit of light absorbed by the chlorophyll during photosynthesis is the proton.
- (ii) The part of the ear associated with balance is the cochlea.
- (iii) Pregnancy in women can be prevented by the method of vasectomy.
- (iv) Cones are the receptor cells in the retina of the eye sensitive to dim light.
- (v) Brain is covered by meninges.

(c) Complete the following statements by filling in the appropriate word :
- (i) The finest ducts or tubes through which air travels in the lungs are the..... .
- (ii) ..... connects the eye to the visual areas of the conrnea and brain.
- (iii) Hypothyroidism leads to..... .
- (iv) The other name of tear gland is ..... .
- (v) The trachea is prevented from collapsing by the presence of incomplete ..... .

(d) Choose the odd one in each of the following :
- (i) GH, ACTH, ADH, TSH
- (ii) Cyton, Axon, Dendron, Cerebrum
- (iii) Chromatid, Centromere, Spindle and Centriole.
- (iv) Chlorophyll, Haemoglobin, Starch, CO_2.
- (v) Guttation, Bleeding, Transpiration, Osmosis.

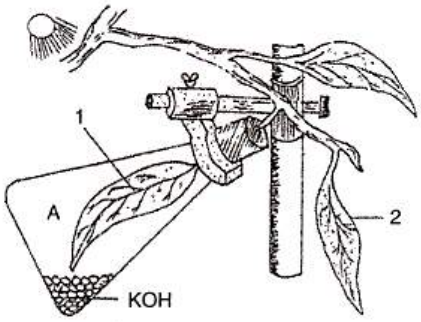
(e) Select the correct answer out of the four available choices given under each question :
- (i) In mitosis :
  - (a) Two cells are produced.
  - (b) Four cells are produced.
  - (c) Eight cells are produced.
  - (d) Six cells are produced.
- (ii) The basal metabolic rate in body cells is regulated by :
  - (a) Parathyroid.
  - (b) Thyroid.
  - (c) Pituitary.
  - (d) Thymus.

(iii) If the vasa deferentia of man are surgically disconnected or removed :
  (a) Semen will be without sperm.
  (b) Sperms in the semen will be without nuclei.
  (c) Spermatogenesis will not take place.
  (d) Sperms in semen will be non-motile.

(iv) In hot summer day, plant cooling is due to :
  (a) Loss of water vapours from leaves.
  (b) Transport of water in plants.
  (c) Loss of liquid water.
  (d) Loss of water from entire plant.

(v) When cell is fully turgid, which of the following will be zero :
  (a) Osmotic pressure (b) Turgor pressure
  (c) Wall pressure (d) Suction pressure (DPD).

(f) The figure given below represents an experiment to demonstrate a particular aspect of photosynthesis. The alphabet 'A' represents a certain condition inside the flask.



(i) What is the aim of the experiment ?
(ii) Identify the special condition inside the flask.
(iii) Name an alternative chemical that can be used instead of KOH.
(iv) In what manner do the leaves 1 and 2 differ at the end of the starch test ?

(g) Which of the statements in column II are appropriate for the items listed in column I ? Rewrite the correct matching pairs :

Column I	Column II
(i) The blind spot	(a) is the place for dark reaction of photosynthesis.
(ii) The yellow spot	(b) is the place for light reaction of photosynthesis.
(iii) The stroma	(c) is free of rod cells.
(iv) The grana	(d) is the exact centre of the posterior portion of the retina.
(v) Cretinism	(e) is a condition due to lack of thyroxin in a child.

(h) State one main function of each of the following :
(i) Glucagon (ii) Scrotal sacs (iii) Ear ossicles
(iv) Lens of the eye (v) Myelin sheath.

Section II (40 Marks)

Attempt any **four** questions from this section

Question 2.

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

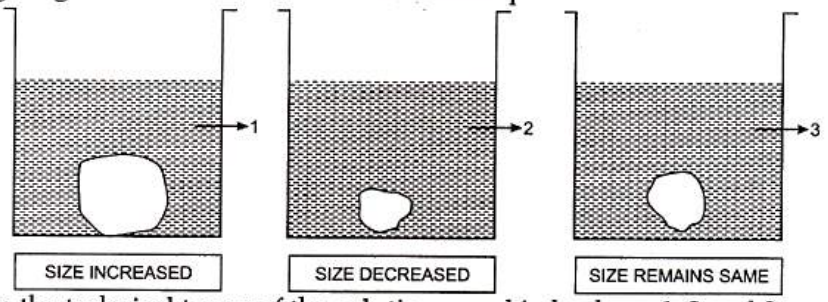
(i) Spinal nerves and Cranial nerves (Number of nerves).
(ii) Near vision and Distant Vision (shape of the eye lens)
(iii) Corpus callosum and Corpus luteum. (function).
(iv) Turgor pressure and wall pressure. (Explain).
(v) Disinfectant and Antiseptic (Definition).

(b) The sketch given shows a certain condition in an individual :

(i) Name the condition.
(ii) What is the underlying cause of this condition ?
(iii) Which hormone is required for iodine synthesis ?
(iv) Where is thyroid gland located ?
(v) The hormone secreted by thyroid gland is controlled from which hormone.

Question 3.

(a) A candidate in order to study the process of osmosis has taken 3 potato cubes and put them in 3 different beakers containing 3 different solutions. After 24 hours, in the first beaker the potato cube increased in size, in the second beaker the potato cube decreased in size and in the third beaker there was no change in the size of the potato cube. The following diagram shows the result of the same experiment :



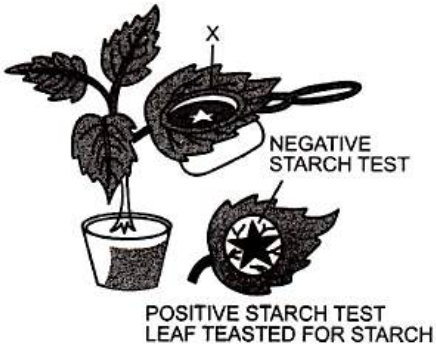
(i) Give the technical terms of the solutions used in beakers, 1, 2 and 3.
(ii) In beaker 3 the size of the potato cube remains the same. Explain the reason in brief.
(iii) Write the specific feature of the cell sap of root hairs which helps in absorption of water.
(iv) What is osmosis ?
(v) How does a cell wall and a cell membrane differ in their permeability ?

(b) If a dominant homozygous tall plant bearing red flowers is crossed with a recessive homozygous dwarf plant bearing white flower.

(i) What will be the genotype and phenotype of the F_1 generation ?
(ii) If the F_1 plants are self-pollinated, what will be the genotype and phenotype of the resulting F_2 generation ?

Question 4.

(a) The diagram given alongside demonstrates the importance of a factor necessary for photosynthesis. The star-shaped portion of the leaf exposed to light shown in the diagram appears blue when tested for starch, after the destarched potted plant was exposed to light for about 12 hours.



(i) What is the aim of this experiment ?

(ii) How will you test the presence of starch ?

(iii) What are the factors necessary for photosynthesis ?

(iv) What is the part labelled 'X' ?

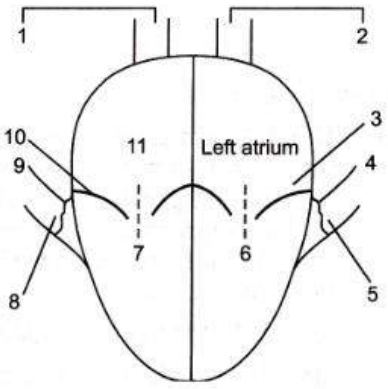
(v) Define the physiological phenomenon that takes place in the given experiment.

(b) Complete the following table by filling in the blanks from 1 to 10 with appropriate terms :

S. No.	Gland	Secretion	Function / Effect on body
1.	Thyroid	1	2
2.	3	Vasopressin	4
3.	5	6	Promotes glucose utilization by the body cells.
4.	Lacrimal gland	7	8
5.	Adrenal medulla	9	10

Question 5.

(a) Given alongside is a highly diagrammatic sketch of the internal structure of the human heart :



(i) Name the parts numbered 1–11.

(ii) What is the main difference in the quality of blood contained in parts 6 and 7 ?

(b) Answer the following questions :

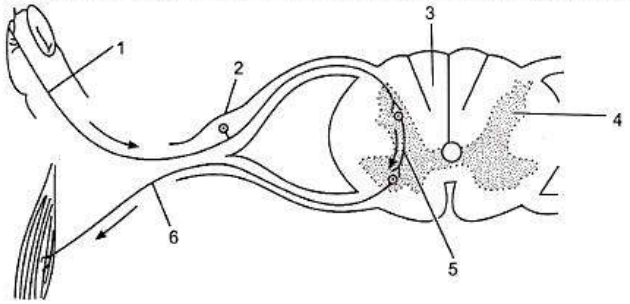
(i) Man can live without food for a number of days, but he cannot survive without O_2 for more than a few minutes why ?

(ii) 1st Meiotic division is the reduction division.

(iii) Why do you think there is a stability or a decline in the population of developed countries ?

Question 6.

(a) The diagram given below is a representation of a certain phenomenon pertaining to the nervous system. Study the diagram and answer the following questions :



(i) Name the phenomenon that is being depicted.
(ii) Give the technical term for the point of contact between the two nerve cells.
(iii) Name the parts 1, 2, 3 and 4.
(iv) Write the functions of parts 5 and 6.
(v) How does the arrangement of neurons in the spinal cord differ from that of the brain ?

(b) A potted plant was taken in order to prove a factor necessary for photosynthesis. The potted plant was kept in the dark for 24 hours. One of the leaves was covered with black paper in the centre. The potted plant was then placed in sunlight for a few hours.
(i) What aspect of photosynthesis was being tested ?
(ii) Why was the plant placed in the dark before beginning the experiment ?
(iii) During the starch test why was the leaf :
(1) boiled in water
(2) boiled in methylated spirit.
(iv) Write a balanced chemical equation to represent the process of photosynthesis.
(v) Draw a neat diagram of a chloroplast and label its parts.

Question 7.

(a) Write briefly about the following :
(i) Coordination in the human body by hormones.
(ii) How do thunderstorms helps to improve the fertility of the soil ?

(b) Give scientific reasons for the following statements :
(i) Use of C.F.C. is banned in many countries.
(ii) We cannot distinguish colours in moonlight.
(iii) Balsam plants wilt during midday even if the soil is well watered.
(iv) Carbon monoxide is highly dangerous when inhaled.
(v) A person after consuming alcohol walks clumsily.