

ICSE Board
Class X Biology
Gold Series
Sample Paper – 1 (Solution)

SECTION-I

Answer 1

(a)

- (i) Prostate gland secretes an alkaline secretion into the semen which neutralises acid in female's vagina.
- (ii) Placenta protects and provides nourishment, oxygen, etc. to the foetus. It also acts as an endocrine gland and produces oestrogen and progesterone.
- (iii) Pacemaker is SA node a node of cardiac muscles which initiates the heart beat and transmits further.
- (iv) Corpus callosum connects the two hemispheres of the brain and it transfers the information from one hemisphere to the other hemisphere.
- (v) Fovea serves as the region of brightest vision and also of the colour vision.

(b)

- (i) Haemoglobin
- (ii) Ureter
- (iii) Grana of chloroplast
- (iv) Phloem
- (v) Graafian follicle

(c)

- (i) False. The laws of heredity were proposed by Mendel.
- (ii) False. Penicillin obtained from *Penicillium notatum* is an antibiotic.
- (iii) False. Cells that have lost their water content are said to be plasmolysed.
- (iv) True.
- (v) True.

(d)

- (i) (d) Decreased transpiration
- (ii) (b) Transpiration
- (iii) (d) Active transport
- (iv) (c) Nucleic acid
- (v) (d) Production of identical individuals

(e)

- (i) Diaporesis.
- (ii) Active absorption.
- (iii) Metaphase.
- (iv) Alleles.
- (v) Zygote.

(f)

- (i) Destarched plant → placed in sunlight → a leaf boiled in alcohol → washed in water → iodine added.
- (ii) Interphase → Prophase → Metaphase → Anaphase → Telophase.
- (iii) Seminiferous tubules → epididymis → vas deferens → urethra → penis.
- (iv) Pinna → an auditory canal → tympanum → ear ossicles → cochlea.
- (v) Soil water → root hair → cortex → endodermis → xylem.

(g) Hydathodes; Guttation; Hydrostatic; Less.

In some plants, droplets of water appear along the margin. This water comes out through special pores called **hydathodes** and the process of escape of water is known as **guttation**. This process is due to increased **hydrostatic** pressure and **less** transpiration.

(h)

- (i) Vasopressin
- (ii) Insulin
- (iii) Oxytocin
- (iv) Adrenaline
- (v) Follicle stimulating hormone (FSH)

Section II**Answer 2****(a)**

- (i) To show that light is necessary for photosynthesis.
- (ii) Part A and part B show blue black colour. This is because part A and B are exposed to the sunlight and thus starch is produced in these parts. Thus these parts show positive starch test.
- (iii) Part 'C' shows brown colour since it is covered with black paper before the experiment. This part of the leaf does not undergo photosynthesis and thus due to absence of starch it gives negative starch test.
- (iv) Iodine.

(b)

- (i) The process of formation of ATP from ADP by using electrons and by adding one phosphate group during light reaction is called photophosphorylation.
- (ii) Tubectomy in females and Vasectomy in males.
- (iii) Factors Responsible for Population Growth are as follows:
 - 1. Advanced medical facilities.
 - 2. Increased and quality food production
- (iv) Synapse is a point of contact between the terminal branches of axon of one neuron and dendrites of another neuron.
- (v) Ciliary muscles change or regulate the shape of the lens.

Answer 3**(a)**

- (i) Adrenal gland.
- (ii) It is situated on the top of both kidneys like a cap.
- (iii) Adrenaline and Glucocorticoids.
- (iv) Adrenaline - increases metabolism in emergency by increasing heart blood pressure, etc. Glucocorticoids - Regulates carbohydrates, fat and protein metabolism.
- (v) 1. Adrenal Cortex 2. Adrenal Medulla.

(b)

- (i) Disinfectants: These are the strong chemicals applied on the spot where microorganisms grow and multiply.
- (ii) Ear Ossicles: The three bony structures present in the middle ear i.e. malleus, incus and stapes is called ear ossicles. Function - Ear ossicles receive the vibrations from the eardrum. Malleus and incus magnify the vibrations of the third ossicle i.e. stapes. Stapes transmits the vibrations further to the oval window.
- (iii) Peripheral nervous system includes nerves which carry impulses to and central nervous system i.e. cranial nerves and spinal nerves.
- (iv) The process of WBCs squeezing out through the walls of the blood capillaries is called diapedesis.

Answer 4**(a)**

- (i) 1. Nucleus; 2. Cytoplasm; 3. Cell wall; 4. Cell membrane; 5. Vacuole.
- (ii) Part '3' i.e. the cell wall allows the entry of water as it is freely permeable. Part '4' i.e. is the cell membrane which is semi-permeable allows water to enter into the root hair cells. Part '5' i.e. vacuole: The cell sap of vacuole contains more concentration of solute than outside water so water enters into the cell by osmosis.
- (iii) If some fertilisers are sprinkled near the root hair in the soil, exosmosis will take place and the water will move out of the root hair. Thus the root hair would become flaccid.
- (iv) Plasmolysis is the shrinkage of protoplasm, when a cell is placed in a hypertonic solution.

(b)

- (i) On a bright sunny day, due to high temperature, the rate of transpiration exceeds the rate of absorption of water by leaves. This causes deficiency of water in plants. Hence, on a bright sunny day the leaves of certain plants roll up.
- (ii) The salt concentration is more in the body of marine fish than in tap water. If the marine fish is thrown under tap water, water enters the fish due to concentration gradient between fish and tap water. The fish become more turgid and thus finally bursts leading to its death.
- (iii) The heart pushes the blood directly into arteries with a great force and pressure, then relaxes for a while during joint diastole and then again pushes the blood into the arterial system. Therefore, the blood in arteries flow in spurts.
- (iv) In nose, the hair present in the nasal passage and the mucous membrane trap the dust particles and germs which enter while breathing in air. But, on breathing through mouth, there is no first line defence system and the substances will get direct entry in our body. Therefore, it is advisable to breathe through nose and not through the mouth.
- (v) When cell is old or damaged. Lysosomes secrete the lytic enzyme 'lysozyme' which digest or destroys the entire cell. Therefore, lysosomes are termed as suicidal bags of a cell.

Answer 5

(a)

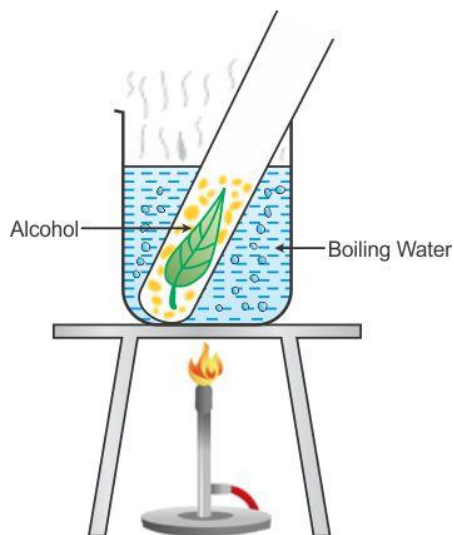
(i) Telocentric Chromosome:



(ii)

Phenotype	Genotype
Phenotype is the physical appearance of an individual which is genetically controlled.	It is the genetic constitution of an organism responsible for its physical appearance.

(iii) Starch Test:



- Take a destarched leaf and keep it in boiling water for a minute to kill the cells.
- Then dip the boiled leaf in alcohol/methylated spirit over a water bath to remove chlorophyll. The leaf becomes hard and brittle.
- Place the leaf in hot water to soften it.
- Spread the leaf in a dish and pour iodine solution on it. The presence of starch is indicated by a blue-black colour.

(b)

- (i) Cochlea
- (ii) Malleus (hammer), Incus (anvil) and Stapes (stir up). The biological terms for these three bones are 'ear ossicles'.
- (iii) 1. Static Balance: Utriculus and Sacculus
2. Hearing: Cochlea
3. Dynamic Balance: Semicircular canals.
- (iv) Auditory Nerve

Answer 6**(a)**

- (i) Father is colourblind.
- (ii) Three daughters and two sons.
- (iii) Child 1 is colourblind.
- (iv) All daughters from 2-5 are carriers while all the sons are normal.
- (v) X chromosome.

(b)

- (i) Excretion: Separation and elimination of the metabolic nitrogenous wastes from the body is called excretion.
- (ii) Nephron
- (iii) The cortex of kidney consists of malpighian corpuscles which are present in large number and show dot-like appearance. Therefore, the cortex of the kidney shows dotted appearance.
- (iv) Functions of the Kidney:
 - 1. To excrete nitrogenous metabolic waste and substances in excess from the body.
 - 2. Maintain the water and mineral concentration i.e. osmoregulation.

Answer 7**(a)**

- (i) 1. Prostate gland; 2. Cowper's gland; 3. Urethra; 4. Sperm duct/Vas deferens; 5. Testis
- (ii) Prostate gland pours an alkaline secretion into the semen which neutralises the acid in female's vagina. Vas deferens (sperm duct) - stores and transports the sperm from testes to the urethra.
- (iii) Sperms are produced in the testes at a temperature 1 to 2 °C lower than that of the body temperature. To provide the lower temperature testes are present outside the body in the scrotal sacs.

(b)

- (i) The aim of the experiment is to measure transpiration.
- (ii) The oils have been put on the surface the water to prevent the evaporation of water from the surface.
- (iii) The level of water in test tube (a) will decrease while the level of water in test tube b will be unchanged.
- (iv) The fall in the water level in the test tube (a) is due to the transpiration. As plant loses water through transpiration, its roots absorb more water from the test and thus the water level in test tube (a) falls.
- (v) Test tube (b) has been taken as a control experiment. The control helps to compare the water levels in test tube A containing the plants.