

ICSE Board
Class X Biology
Gold Series
Sample Paper – 2 (Solution)

SECTION-I

Answer 1

(a)

- (i) Afferent arteriole
- (ii) Grana of chloroplast
- (iii) Spinal cord
- (iv) Calcitonin
- (v) Liver

(b)

- (i) False. Rods are photoreceptor cells that are sensitive to dim light.
- (ii) True.
- (iii) False. Vasectomy is the surgical method of sterilization in males.
- (iv) True.
- (v) False. Neurons are the basic unit of kidney.

(c)

- (i) SA Node
- (ii) Catabolism
- (iii) Nucleosome
- (iv) Imbibition
- (v) Diabetes insipidus

(d)

- (i) Tympanum, malleus, incus, stapes, oval window.
- (ii) Graafian follicle, ovum, funnel of oviduct, fallopian tube, uterus.
- (iii) Soil water, root hair, cortex, endodermis, xylem.
- (iv) Receptor, sensory neuron, association neuron, motor neuron, effector.
- (v) Conjunctiva, cornea, pupil, lens, yellow spot.

(e)

- (i) Aqueous chamber
- (ii) acromegaly
- (iii) diaphragm
- (iv) anaphase
- (v) endolymph

(f)

- (i) Unconditioned
- (ii) Unconditioned
- (iii) Conditioned
- (iv) Unconditioned
- (v) Unconditioned

(g)

(i)

Rods	Cones
Rod cells are sensitive to dim light and contain the pigment rhodopsin.	Cone cells are sensitive to bright light, responsible for colour vision and contain the pigment iodopsin.

(ii)

Enzymes	Hormones
Enzymes are proteins, secreted or produced at the site of metabolic reaction.	Hormones chemically can be proteins, steroids or amino acids. They are produced by endocrine gland and are transported to the target site by the blood.

(iii)

Menarche	Menopause
It is the onset of menstruation in young females at the age of 13 years.	It is the permanent stoppage of menstruation in females at the age of 45 years.

(iv)

Mitosis	Meiosis
Mitosis helps in replacing damaged cells and body growth.	Meiosis helps in reproduction and to bring variation in progenies.

(v)

Light Reaction	Dark Reaction
It takes place in grana of the chloroplasts and is dependent on light energy.	It takes place in stroma of the chloroplasts and is independent of light energy.

(h)

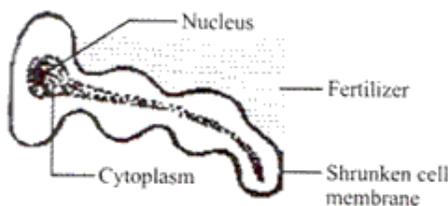
- (i) A - Erythrocytes; B - Leucocytes; C - Thrombocytes.
- (ii) Erythrocytes: Supply oxygen to the cell of the body.
Leucocytes: Play an important role in immunity of body by producing antibodies or performing phagocytosis.
Thrombocytes: help in the coagulation of blood.
- (iii) 1. Leucocytes have pseudopodia to catch and engulf microorganisms.
2. Leucocytes show amoeboid movement so that they can squeeze out of capillaries and can reach at the site of infection in a short period of time.

Section II

Answer 2

(a)

- (i) 1. Root Hair, 2. Soil Particles, 3. Xylem, 4. Cortex, 5. Nucleus
- (ii) The root hair cell is unicellular cell.
- (iii) Diagram of root hair after adding fertilizer



- (iv) Root pressure and osmotic pressure.
- (v) The pressure is set up by the alternate turgidity and flaccidity of cells which help to move the cells sap upwards due to osmotic pressure. This creates the root pressure which ultimately helps to absorb water.

(b)

- (i) Stoma
- (ii) 1. Chloroplast, 2. Inner wall of guard cell, 3. Nucleus, 4. Outer wall of guard cell, 5. Stomatal opening.
- (iii) In A, guard cells are turgid and the stoma is open while in B, guard cells are flaccid and the stoma is closed.
- (iv) The guard cells have thick inner wall and thin outer wall. Guard cells contain chloroplasts. The synthesis of glucose in guard cells leads to increase in osmotic pressure. Due to which guard cells draw water inside and become turgid and bulge outwards. This results in opening of stoma. During night, the photosynthesis stops, thus the amount of glucose inside the guard cells decreases due to which guard cells give out water and become flaccid. This results in closing of stoma.

Answer 3

(a)

- (i) 1. Pinna; 2. Eardrum; 3. Auditory canal; 4. Ear Ossicles; 5. Semi-circular canals; 6. Cochlea; 7. Auditory nerve; 8. Eustachian tube.
- (ii) Part 6 i.e. Cochlea possess organ of corti which helps in transmission of hearing impulse to auditory nerve. Part 7 i.e. Auditory nerve carries impulses for hearing and balancing from the inner ear to brain.
- (iii) The sharp object may damage the ear drum which is the main structure of the ear which receives the stimulus for hearing and sets the further parts of the ear into vibration. Therefore, it is harmful to use a sharp object to remove the wax from ear.

(b)

- (i) 1. Umbilical cord; 2. Placenta; 3. Amniotic fluid; 4. Amnion.
- (ii) Placenta - It protects the foetus and provides nourishment, oxygen and removes urea through umbilical cord. Amniotic fluid - It acts as a shock absorber. It protects the foetus from mechanical jerks.
- (iii) The blood of the foetus is in close contact with the mother's blood. Oxygen and nutrients diffuse from mother's blood to foetus blood and the CO₂ is diffused from foetus' blood to the mother's blood.

Answer 4

(a)

- (i) 1. Larynx; 2. Left lobe of thyroid gland; 3. Trachea; 4. Oesophagus.
- (ii) Part 2 i.e. thyroid gland secretes thyroxine and calcitonin.
- (iii) Enzymes.
- (iv) Hormones may be proteins, amino acids or steroids by nature.
- (v) Iodine is required for the synthesis of thyroxine. So for the secretion of thyroxine in normal amount, proper intake of iodine is necessary.

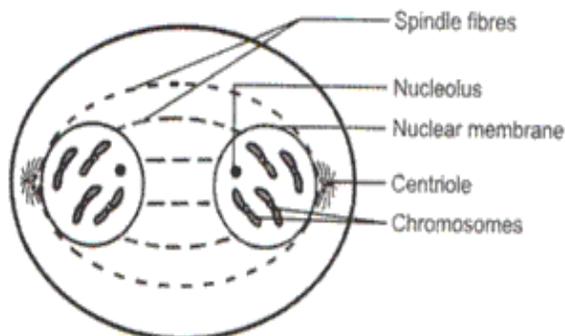
(b)

- (i) Reasons for the increase in population in India:
 - 1. Improved food production and availability of quality food.
 - 2. The most rural population of India is illiterate and hence, it is not aware about the advantages of the small family.
- (ii) NADP - Nicotinamide Adenine Dinucleotide Phosphate BCG - Bacillus Calmette Guerin.
- (iii) Antibiotic is a chemical substance produced by a microorganism, and kills or inhibits the growth of the other microorganisms. Example: Penicillin.
- (iv) Functions of World Health Organization:
 - 1. To promote and support projects for research on diseases.
 - 2. To suggest quarantine measures to prevent spread of diseases to others.

Answer 5

(a)

- (i) Anaphase. The sister chromatids are separated and are moving to opposite poles.
- (ii) 1. Centrioles, 2. Spindle Fibres, 3. Chromatid.
- (iii) In the given diagram there are four pairs of chromosomes.
- (iv) Telophase follows the anaphase.
- (v) Telophase:



(b)

- (i) Increasing population has already put pressure on the limited resources of fossil fuels. It takes millions of years for the formation of fossil fuels. In order to conserve the limited resources of fossil fuels, there is an increasing dependence today on natural sources of energy like sunlight and wind.
- (ii) Medulla oblongata controls the involuntary activities such as heart beat, breathing, etc. Injury to medulla oblongata will lead to the stoppage of such important function. Therefore it causes death.
- (iii) Gametes are formed by the meiosis. Meiosis is responsible to maintain the constant number of chromosomes of a species. During fertilization, if the gametes with half number of chromosomes are fused, then the chromosomes number will be restored in the zygote. Therefore, gametes have a haploid number of chromosomes.
- (iv) The broadness of leaves provide greater surface area for the absorption of light. Also the thinness ensures the immediate trapping of light energy by leaf cells. Therefore, green leaves are thin and broad.
- (v) At high temperature, the warm air is able to hold more water vapour which ultimately increases the evaporation rate by the plants. Therefore, at high temperature, transpiration is high.

Answer 6

(a)

(i) Organic matter and nutrients into the water bodies causes the proliferation of algae which is called algal bloom. Control of algal bloom:

1. Minimal use of detergents and soaps to keep the water sources free from pollution.
2. Judicious use of chemical fertilizers. Use of organic fertilizers like vermicompost and green manure.

(ii) Measures to control soil pollution:

1. Both domestic and commercial wastes should be disposed in the sanitary landfills, on vacant lands where wastes must be collected in layers and then covered with soil.
2. Use of incinerators must be mandatory for biomedical use.
3. Use of vermicompost or green manure in place of chemical fertilizers.

(iii) CFC - Chlorofluorocarbon

DDT - Dichlorodiphenyl trichloroethane

BOD - Biochemical Oxygen Demand

PAN - Peroxyacetyl nitrate

(b)

(i) Hypermetropia

(ii) The person cannot see near objects clearly.

(iii) Causes of hypermetropia:

1. The lens is flattened.
2. The eyeball is shortened from front to back.

(iv) Hypermetropia can be rectified by using converging lens i.e. convex lens.

(v) The image that falls on the retina of a normal eye is inverted, real and diminished.

Answer 7

(a)

(i) Veins

(ii) Valves

(iii) Blood flowing through the veins is at low pressure and moving against the gravity, hence it tends to flow downwards, filling the pocket shaped valves which close. The closing of valves thus prevents the backflow of the blood.

(iv) Valves are present at the opening of aorta and pulmonary artery.

(v) Towards top side of the figure the heart is located.

(b)

(i) 1 - Sclera, 2 - Iris, 3 - Pupil

(ii) There is change in the size of pupil from A to B.

(iii) Circular muscles of iris bring about the change in the size of the pupil.

(iv) The sclerotic layer covers the coloured part of the eye.

(v) Presbyopia occurs in old people where lens loses its flexibility resulting in far sightedness. Astigmatism is a defect in which some parts of the object are seen in focus while others are blurred. It arises due to the uneven curvature of the cornea.