ICSE Board
Class IX Biology
Paper – 3 Solution

SECTION-I

Answer 1

(a)

(i) (c) Human cells contain **23 pairs** of chromosomes.
(ii) (b) **Ginger** is an underground stem.
(iii) (b) Heat-regulating centre is located in the **hypothalamus**.
(iv) (a) A food chain begins with **green plants**.
(v) (b) Haemophilia is a **genetic** disease.

(b)

(i) False. (Melanin gives colour to the skin.)
(ii) False. (Potato tuber lacks stomata.)
(iii) True
(iv) True
(v) False. (Canines are used for tearing the food.)

(Please note that the information provided in brackets is to help you in your learning. It does not have to be included in your answer).

(c)

(i) Tonoplast
(ii) Xylem vessels, Xylem tracheids, Xylem parenchyma and Xylem fibres
(iii) Ptyalin
(iv) Typhoid
(v) Phloem

(d)

(i) Pine (The rest are algae, while pine is a gymnosperm.)
(ii) Centrosome (The rest are present in plant cells, while centrosome is absent in plant cell.)
(iii) Vegetable peel (The rest are non-biodegradable, while vegetable peel is biodegradable.)
(iv) Jaundice (The rest are bacterial diseases, while Jaundice is a viral disease.)
(v) *Platypus* (The rest are mammals that give birth to young ones, while platypus is the only mammal that lays eggs.)

(e)

(i) Epiglottis: Prevents the entry of food into the trachea while swallowing of food.

(ii) Sepals: Protect the inner parts of the flower in the bud stage and help in photosynthesis, if they are green in colour.

(iii) Chloroplast: Helps in trapping sunlight and carries out the process of photosynthesis.

(iv) Endosperm: Provides nourishment to the growing embryo.

(v) Golgi bodies: Secrete hormones, enzymes, etc.

(f)

Column A	Column B
(i) Absorption and secretion in intestines	Columnar epithelium
(ii) Chordates	Have a dorsal nerve cord
(iii) Amphibia	Possess three-chambered heart
(iv) Arthropoda	Open circulatory system with jointed legs
(v) Hypoxia	Deficiency of oxygen reaching the tissues

(g)

(i) Rat

(ii) Ostrich

(iii) Fry

(iv) Penicillin

(v) *Bryophyllum*

(h)

(i) Chloroplast

(ii) Chloroplast is present in the plant cell.

(iii) Chloroplast helps to carry out photosynthesis.

(iv) 1: Outer membrane; 2: Inner membrane; 3: Cytoplasm; 4: Granum

SECTION-II

Answer 2

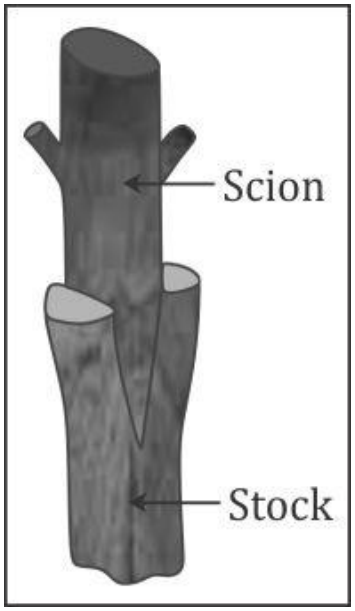
(a)

(i) Seeds need water for germination because:

1. If seeds do not absorb water, the seed coat will not rupture and the radicle will not come out.
2. Water is necessary for chemical reactions and for enzymes to act on the food stored in the cotyledons or endosperm. It can convert the food into a diffusible form, which is easily dissolved and utilized by the growing embryo.

(ii) 'STD' stands for Sexually Transmitted Disease. The causative organism of syphilis is Treponema. It grows in the genital tubes and causes a pus-like discharge. It spreads through sexual intercourse. Therefore, syphilis is an STD.

(b)



The figure shows the method of grafting. In this method, a small branch of the plant is inserted into the stem of a rooted plant of the same species. The inserted portion is covered with clay to prevent the entry of bacteria and also to prevent evaporation. After sometime, the tissues of the inserted part become united. The inserted part is called the scion and the rooted plant is called the stock.

Answer 3

(a)

(i) Uses of bacteria:

1. Bacteria are used in the leather industry, for tanning of leather as some bacteria help break down the soft perishable part of the skin.
2. Curing of tea leaves, where bacteria are used for adding different flavours to tea.
3. Bacteria are used in the medical industry for the production of various antibiotics. Examples: Penicillin from *Penicillium chrysogenum.*
4. Bacteria are used for the production of serum containing anti toxins.

(ii) The process of fusion of the male and female gametes to produce a zygote is called fertilisation.

(b)

(i) When the body is overheated, the blood vessels dilate. The blood flow increases, resulting in loss of heat. This dilation of blood vessels is called vasodilation. When the body is cooled at a very low rate, the blood vessels constrict and allow less blood to flow through it, thus preventing heat loss. This process is called vasoconstriction.

(ii) Sebaceous glands secrete sebum. Sebum is an oily secretion which makes the skin waterproof (prevents water loss).

(iii) Melanin

Answer 4

(a)

(i) Many public places are left messy and unpleasant. Some industries pollute the surrounding environment. In many drains, the water flows through uncovered or the water is stagnant. All these enhance the growth of germs and increase the chances of infection. Therefore, public cleanliness is important for individual health.

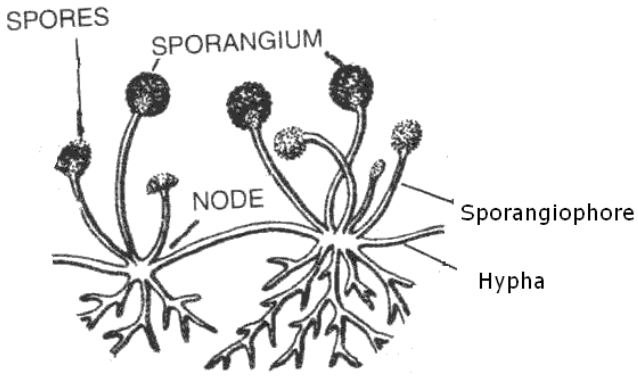
(ii) No, a cell cannot survive, if its cytoplasm is removed. This is because the cytoplasm is the site of many important chemical reactions. Different cell organelles are also embedded in the cytoplasm. So, if the cytoplasm is removed, organelles will not be able to function and the cell will ultimately die.

(b)

Feature	Plant cell	Animal cell
Cell wall	1. Presence of a definite cell wall, made up cellulose.	1. Absence of cell wall.
Centrosome	2. Absence of centrosome.	2.Presence of centrosome.
Plastids	3. Presence of plastids.	3. Absence of plastids.
Cell membrane	4. Present internal to the cell wall.	4. Forms the boundary of the cell.
Vacuole	5. Presence of one or more prominent vacuoles.	5. Presence of small and temporary vacuoles.

Answer 5

(a) In the process of spore formation, many nuclei along with cytoplasm are transferred to the tip of the sporangiophore. The tip is then partitioned off from the main hypha. It swells to form the sporangiophore. The protoplasm inside the sporangium breaks up into minute pieces, each of which contains several nuclei. Each piece surrounds itself with a wall and becomes a spore.



(b)

VIRUSES	BACTERIA
1. Very small in size.	1. Larger in size.
2. Visible only under an electron microscope.	2. Visible under a light microscope.
3. Non-cellular.	3. Single-celled.
4. Have no metabolism.	4. Have metabolism.
5. Do not take in any food.	5. Take in food by absorption.
6. Do not grow and divide.	6. Grow in size and divide to produce more bacteria.

Answer 6

(a)

(i) Gaseous exchange in alveoli.
(ii) Air rich in oxygen is present in the bronchioles.
(iii) The pulmonary artery contains deoxygenated blood.
(iv) The pulmonary vein contains oxygenated blood.
(v) Stomata is present in plants for gaseous exchange.

(b)

(i)

1. Hypogynous ovary.
2. The ovary is located above the thalamus and the floral whorls are below the ovary.
3. China rose, Mustard.

(ii) Yes, the micropyle is important for the seed. It is through the micropyle, that seeds get water and oxygen for germination.

Answer 7

(a)

(i) Malaria is a disease caused by a protozoan *Plasmodium*. It is spread by the bite of the female Anopheles mosquito. Its symptoms are high fever and chills.

(ii)

1. Housefly
2. Cholera, Typhoid
3. The housefly sits on garbage, decaying organic matter, etc. The disease-causing germs get transferred to the body of the fly. When the fly sits on eatables, germs spread to the eatables and when the eatables are consumed by man they enter into his body.

(b)

(i) A bat is a mammal. It is viviparous. It has mammary glands. It has external ears and its body is covered with hair. On the other hand, birds are oviparous. Their body is covered with feathers. This is why although a bat can fly it is not a bird.

(ii) Bacterium *Streptococcus* is added to milk. This changes the pH of the milk. The enzyme renin is added to speed up the curdling of milk. Soft cheese is made by allowing the liquid to drain from the curd, while hard cheese is made by compressing curd. Common salt is added as a preservative and to increase the flavour of cheese.