

**ICSE Board  
Class IX Biology  
Sample Paper - 10 Solution**

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**SECTION-I**

**Answer 1**

**(a)**

- (i) Epiglottis
- (ii) Perianth
- (iii) Coleorhiza
- (iv) Prophylaxis
- (v) Diastema

**(b)**

- (i) Mitochondria (mitochondria has its own DNA, the rest do not)
- (ii) Mouth (The rest are structures associated with the respiratory system)
- (iii) Sucrose (The rest are monosaccharides, while sucrose is a disaccharide)
- (iv) Scabies (The rest are protozoan diseases, while scabies is caused by mites)
- (v) Plastic packing (The rest are agricultural wastes, while plastic packing is domestic waste)

**(c)**

- (i) Lactic acid
- (ii) Putrefaction
- (iii) Dormancy
- (iv) Streptomycin
- (v) Duodenum

**(d)**

- (i) False. (Coconut is not a dry fruit.)
- (ii) False. (Insects have three pairs of legs.)
- (iii) True
- (iv) False. (Intercostal muscles help in external respiration or breathing.)
- (v) True

***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.***

(e)

(i) Ribosome	Synthesis of proteins
(ii) Centrosome	Cell division in an animal cell
(iii) Haustoria	Absorption of food in parasites
(iv) Epiglottis	Closes the glottis while swallowing of food
(v) Glenoid cavity	Articulation of humerus

(f)

(i)

Prokaryotic cell	Eukaryotic cell
1. Prokaryotic cells do not have a well-defined nucleus.	1. Eukaryotic cells have a well-defined nucleus.
2. Presence of one chromosome is observed in these cells.	2. Presence of more than one chromosome is observed in these cells.

(ii)

Respiration	Breathing
1. Respiration involves oxidation of glucose.	1. Breathing involves taking in of O <sub>2</sub> and giving out CO <sub>2</sub> .
2. Respiration liberates energy.	2. Breathing does not liberate energy.

(iii)

Parenchyma	Sclerenchyma
1. The cells are oval or spherical.	1. The cells are angular.
2. Nucleus is present in these cells.	2. Nucleus is absent in these cells.

(iv)

Striated muscles	Unstriated muscles
1. Myofibrils with alternate light and dark bands.	1. Myofibrils without alternate light and dark bands.
2. Striated muscles are involved in voluntary actions.	2. Unstriated muscles are involved in involuntary actions.

(v)

Active Immunity	Passive Immunity
1. Produced by one's own body.	1. Received from an outside source.
2. Provides effective and long-lasting protection	2. Protection is less effective and does not ensure protection against subsequent infections.

(g)

- (i) Magnets (The rest are parts of a compound microscope, while magnets are used in an electron microscope)
- (ii) Sieve tubes (The rest are present in xylem, while sieve tubes are present in phloem)
- (iii) Nymph (The rest are the stages of the life cycle of insects, while nymph is an immature form of insects)
- (iv) Polysepalous (The rest are arrangements of stamens, while polysepalous is an arrangement of sepals)
- (v) Tube nucleus (The rest are found in the ovule, while tube nucleus is found in the pollen grain)

***(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).***

(h)

Column A	Column B
(i) Ecology	Environment
(ii) Ichthyology	Fishes
(iii) Cytology	Cells
(iv) Ornithology	Birds
(v) Herpetology	Snakes

## SECTION-II

### Answer 2

(a)

- (i) The given figure shows the structure of a bone.
- (ii) 1: Canaliculi; 2: Haversian canal; 3: Osteocytes
- (iii) We can see this structure in the internal skeleton of the body.
- (iv) Part 1 contains blood vessels. Hence, they provide nourishment to the bone cells.

(b)

- (i) 1: Pollen grains; 2: Stigma; 3: Style; 4: Pollen tube; 5: Male gametes; 6: Egg cell; 7: Polar nuclei; 8: Antipodals; 9: Embryo sac; 10: Synergids
- (ii) The fusion of one male gamete and two polar nuclei is called triple fusion.
- (iii) Part 6 changes into the zygote and later into an embryo. Part 7 changes into an endosperm nucleus and later into an endosperm.

### Answer 3

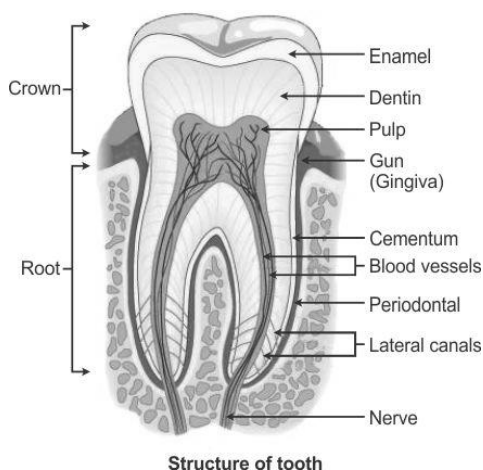
(a)

(i)

Cartilaginous fish	Bony fish
1. The skeleton is made up of cartilage.	1. The skeleton is made up of bone.
2. Operculum is absent.	2. Operculum is present.

- (ii) Symptoms of cholera: Acute diarrhoea, vomiting, muscular cramps.
- Symptoms of mumps: Painful swelling in the neck region.
- Symptoms of rabies: Hydrophobia and it affects the central nervous system.

(b) Each tooth can be divided into three parts; crown, neck and root.



The crown is the exposed part of the tooth projecting above the gums. The root of the tooth is embedded in a cup-shaped socket of the jaw bone and is surrounded by cement. In incisors and canines, the root consists of a single process or fang. In premolars and lower molar, it has two processes and in upper molars, it consists of three processes. Cement is a bone-like structure covering and fixing the root in position. The neck is the constriction between the root and the crown. Enamel, also known as ivory, covers the crown and neck of the tooth. It is the hardest substance in the body. Enamel protects teeth from wear and tear. A major part of the tooth is made up of dentine. Dentine is a very hard material and contains fine canals carrying cytoplasm of the cells in pulpy cavity. The central space of the tooth is called the pulp cavity. It is filled with a soft connective tissue, called the pulp. The pulp cavity contains blood capillaries, lymph vessels and nerve fibres, connecting to the rest of the body.

#### Answer 4

(a)

- (i) A disease which spreads from one place to another affecting a large number of people is called an epidemic disease. E.g. plague.
- (ii) The arrangement of ovules inside the ovary is called placentation.

**Types of placentation:**

- (1) Marginal placentation.
- (2) Axile placentation.
- (3) Parietal placentation.

(b)

- (i) Characteristics of Phylum Porifera:
  - 1. They are simple multicellular organisms.
  - 2. They have a single central hollow tube in the body, with multiple pores or canals all along the body wall.
- (ii) Disadvantages of vegetative propagation:
  - 1. There is no genetic variation obtained with vegetative propagation.
  - 2. The plants are more prone to a disease that is specific for a species.
  - 3. Since many plants are produced, it results in overcrowding and lack of nutrients for all plants.

#### Answer 5

(a)

- (i) Adaptations of ileum for the absorption of digested food:
  - 1. It is very long to provide more surface area for absorption.
  - 2. The presence of a large number of villi further increases the surface area.
  - 3. It has a single-cell epithelium.
  - 4. It has a narrow lumen for slow movement of food, allowing absorption.

(ii) Seeds that are sown very deep inside the soil fail to germinate because:

1. They have no proper supply of oxygen (for respiration).
2. There is insufficient pushing force in the embryonic parts (hypocotyl or epicotyl) to break through the upper layers of soil.

**(b)**

(i)

Germination (Hypocotyl/Epicotyl)	Viviparous germination
1. The seed germinates away from the mother plant.	1. The seed germinates inside the fruit, while it is still attached to the mother plant.
2. The developing embryo derives food from the cotyledons.	2. The developing embryo derives food from the fruit.
3. E.g. Bean seed, Maize grain	3. E.g. Rhizophora, Sonneratia

(ii) The adults of Anopheles and Culex can be recognized by their sitting posture. Anopheles always rests with its straight body, making an angle against the surface, while Culex keeps the body more or less parallel.

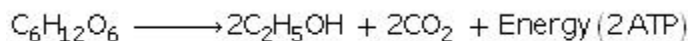
#### Answer 6

**(a)**

- (i) Mitochondrion
- (ii) 1: DNA; 2: F1 particle/oxysome; 3: Cristae
- (iii) Mitochondria help in cellular respiration and produces energy in the form of ATP.

**(b)**

- (i) During unfavorable conditions, bacteria form a thick wall called cyst around themselves. The cyst is resistant to drought, etc. During favorable conditions, the cyst bursts open and releases spores. Spores have the capacity to withstand heat, cold, drying and the reaction to chemicals.
- (ii) The type of respiration in which oxygen is not used is called anaerobic respiration.



#### Answer 7

**(a)**

- (i) Communicable diseases are diseases which are transmitted from one person to another person. E.g. Mumps, AIDS.
- (ii) BCG: Bacillus Calmette Guerin  
AIDS: Acquired immunodeficiency syndrome  
DTP vaccine: Diphtheria, Tetanus and Pertussis vaccine

**(b)**

- (i) A seed contains an embryo. It gives rise to a new plant.
- (ii) A fresh seed from a plant fails to germinate, even if the conditions for germination are favourable, because it has to pass through a period of dormancy, during which it undergoes physiological maturation.
- (iii) Proteins are an essential part of our diet because they provide chemical material for growth and repair of body cells and tissues. At the time of emergency, they may also be oxidized to release energy.