ICSE Board Class IX Biology Paper – 3 Solution

SECTION-I

Answer 1

(a)

- (i) Synovial fluid
- (ii) Parthenocarpy
- (iii) Maize
- (iv) Plumule
- (v) Yeast

(b)

- (i) Jackfruit
- (ii) virus
- (iii) petals
- (iv) plumule
- (v) anther

(c)

- (i) False.
 - Correct Statement Potato tuber lacks stomata.
- (ii) True.
- (iii) False.
 - Correct Statement Mosquitoes have three pairs of wings.
- (iv) False.
 - Correct Statement Mode of nutrition in mosses is autotrophic.
- (v) True

(d)

(i)

Cold-blooded animals	Warm-blooded animals
The body temperature, of cold blooded	The body temperature, of warm blooded
animals changes according to the	animals remains constant irrespective of the
surrounding temperature.	surrounding temperature.

(ii)

Self-pollination	Cross-pollination
Self pollination is a type of pollination	Cross pollination is a type of pollination
within a single flower or between two	between two flowers of two different plants.
flowers of the same plant.	1

(iii)

Earthworm	Snake
The body of an earthworm is soft and made	The body of a snake is covered by white scaly
up of segments.	exoskeleton.

(iv)

Infectious diseases	Non-infectious diseases
Infectious diseases can be transmitted	Non infectious diseases cannot be transmitted
from one person to another.	from one person to another.

(v)

Inspired air	Expired air
Inspired air contains more $O_{2.}$	Expired air contains more CO_{2} .

(e)

- (i) Tapeworm
- (ii) It belongs to the category of worms.
- (iii) It is a parasite.
- (iv) Taeniasis
- (v) Suckers help the animals fix themselves to the gut wall of their hosts.

(f)

Column A	Column B
1. Ribosomes	b. Protein synthesis
2. Vacuoles	d. Store excess water
3. Cell membrane	e. Entry and exit of substances in and out of the cell
4. Centrioles	a. Cell division
5. Nucleus	c. Regulates growth of the cell

(g)

- (i) Frog. It is an amphibian, while lizard, snake, tortoise are reptiles.
- (ii) Centrosome. It is not present in a plant cell, while chloroplast, mitochondria and cell wall are present in the plant cell.
- (iii) Cartilage. It is an animal tissue, while collenchyma, sclerenchyma, parenchyma are plant tissues.
- (iv) Formalin. It is an example of a disinfectant while lysol, carbolic acid and benzoic acid are examples of antiseptics.
- (v) Pine. It belongs to the Kingdom Plantae while *Chlamydomonas, Amoeba, Paramoecium* belong to the Kingdom Protista.

(h)

- (i) <u>Saprophytes</u>: Organisms which depend on dead and decaying matter are called saprophytes.
- (ii) <u>Fertilisation</u>: Fertilisation is the process of fusion of the male gamete with the female gamete to produce a zygote.
- (iii) <u>Blood</u>: Blood is a fluid connective tissue. It is red in colour due to the presence of haemoglobin. It contains plasma, RBCs, WBCs and platelets.
- (iv) <u>Vaccination</u>: Vaccination is the introduction of any kind of dead or weakened germs into the body of a living being to develop immunity against the respective disease.
- (v) <u>Vegetative propagation</u>: Vegetative propagation is a form of asexual reproduction in which relatively large, differentiated part of the plant's body gets detached from the parent plant, and develop into an independent plant.

SECTION-II

Answer 2

(a)

- (i) Potassium hydroxide solution has been kept in test tube X and Y to absorb CO₂ produced during respiration.
- (ii) If the boiled peas are not soaked in a disinfectant, there may be bacterial growth in the tube Y, and it will be difficult to get the desired results of bacterial respiration.
- (iii) The germinating peas respire and oxygen is used, which creates a vacuum in the tube. The presence of the vacuum raises the coloured water in tubing 1.
- (iv) Respiration
- (v) Respiration is the step-wise oxidation of glucose in living cells to release energy.

(b)

- (i) Incisors, Canines, Premolars and Molars.
- (ii) Incisors are used for biting and cutting.
 Canines are used for holding and tearing food.
 Premolars are used for grinding and crushing food.
 Molars are used for grinding and crushing food.
- (iii) Calcium and Phosphorus

Answer 3

- (a) In the pea seed, hypogeal type of germination takes place. Hypogeal germnation occurs in the following steps:
 - 1. The seed absorbs water and swells.
 - 2. The seed coat bursts and the radicle emerges out. It grows downwards into the soil and forms the root system.
 - 3. In the initial stages of development, the plumule is arched and thus protects the young shoot from damage during its emergence from the soil.
 - 4. The epicotyl elongates and the plumule emerges out of the soil. The plumule grows upwards and forms the shoot of the seedling.
 - 5. The cotyledons supply food to the young seedling till it is able to manufacture its own food. They wither away later.

(b)

- (i) <u>**Toxoids**</u> Toxoids stimulate the production of the respective antibodies within the bodies of organisms.
- (ii) **<u>Amylopsin</u>** Amylopsin converts the left over starch into maltose during digestion.
- (iii) <u>**Chormoplasts**</u> Chromoplasts impart colours to fruits and flowers.
- (iv) **<u>Parenchyma</u>** Parenchyma stores food and provides temporary support to the plant.
- (v) <u>Magnesium in the human body</u> Magnesium is required for enzyme synthesis and for the normal bone and tooth structure.

Answer 4

(a)

(i) **Functions of the liver**:

- 1. The liver secretes bile which is essential for lipid metabolism.
- 2. It helps in the deamination of amino acids, and the extra nitrogen is converted into urea and excreted from the body in the form of urine.
- 3. It helps in the metabolism of glucose, by storing the excess glucose, in the form of glycogen, or converting glycogen into glucose.
- 4. It produces heparin which is an anti-coagulant.
- 5. Detoxification of alcohol and drugs takes place in the liver.
- 6. The liver stores excess water and thus regulates the blood volume.
- (ii) Diseases which do not spread from one person to another person by contact or any other method are called non-communicable or non-infectious diseases.
 Examples - Beri-beri, Scurvy, Arthritis, etc.

- **(b)**
 - (i) The myofibril consists of two proteins called actin and myosin. In response to a nerve impulse, the actin filament slides over the myosin filament. This decreases the length of the sarcomere, which causes the muscle to contract.



(ii) Structure of the mitochondrion:

Answer 5

(a) <u>Structure of a tooth</u>:



(b)

(i) Functions of Red Cross:

- 1. To extend relief and help to the victims of any calamity flood, fire, famine and earthquake
- 2. To procure and supply blood for needy victims of war and other calamities
- 3. To extend all possible first-aid in an accident
- 4. To arrange for ambulance services in emergencies

(ii) Test for the presence of proteins:

Procedure:

- 1. Take a piece of hardboiled egg white in a test tube.
- 2. Add few drops of dilute nitric acid to it.
- 3. Heat the test tube gently.
- 4. Rinse off the acid with water and add few drops of ammonium hydroxide to it.

Observation and Inference:

When the solution of egg white and dilute nitric acid is heated, the colour of the solution changes from colourless to yellow.

After adding ammonium hydroxide the colour changes from yellow to orange red. The change in the colour of the solution indicates the presence of proteins.

Answer 6

(a)

- (i) Cardiac muscles
- (ii) 1 Striations
 - 2 Intercalated disc
- (iii) Characteristics of cardiac muscles:
 - 1. Muscle fibres are striated, uni-nucleated and branched.
 - 2. Each muscle fibre is surrounded by the sarcolemma.
 - 3. Cardiac muscles do not tire.
 - 4. They contract rhythmically and rapidly.
 - 5. The activity of the cardiac muscles is involuntary.

(b)

- (i) 1 Trachea
 - 2 Bronchi
 - 3 Bronchioles
 - 4 Alveoli
- (ii) Function of the alveoli (Part 4) The alveoli are in close contact with the blood capillary network. They are responsible for the exchange of gases between the lungs and the blood.
- (iii)The lungs are covered by two membranes , the inner visceral pleura and the outer parietal pleura. The cavity between these two membranes is filled with a watery fluid called pleural fluid which provides lubrication for the free movement of lungs during expansion and contraction.

Answer 7

(a)

- (i) <u>Significance of studying biology</u>:
 - 1. Studying biology helps us to understand the interdependence of plants, animals and other natural resources. Hence the importance of their conservation.
 - 2. It helps us to understand the causes, transmission, treatment, prevention of diseases which helps us to take proper care of health.
 - 3. Studying features of different plants and animals help us to create new varieties of plants and new breeds of animals. This gives us quality food.
 - 4. Studying biology helps to gather information about different species of plants and animals.
- (ii) Preparation of yoghurt:

The pasteurized milk is mixed with *Lactobacillus* bacterium and the mixture is kept at 45°C. The bacterium ferments the lactose present in milk into lactic acid, thereby helping in the curdling of milk. Fruit pulp, fruit juices, etc. are then added to the curd to make yoghurt.

(b)

- (i) The oxygen present in the inhaled air is absorbed into the blood stream to carry out respiration at the cellular level. Hence, the oxygen content of exhaled air has decreased.
- (ii) In exhaled air, the extra carbon dioxide has been produced by the oxidation of glucose in cells. The extra amount of carbon dioxide is given out into the blood which collects in the lungs by the process of diffusion.
- (iii) In exhaled air, the water vapour has come from glucose after its oxidation.
- (iv) Nitrogen is not used in respiration. Therefore, there no change in the percentage of nitrogen.
- (v) During inspiration, the diaphragm flattens to increase the volume of the thoracic cavity so that more inhaled air can be accommodated.