

**ICSE Board
Class IX Biology
Paper – 5 Solution**

SECTION-I

Answer 1

(a)

- (i) Pulp
- (ii) Micropyle
- (iii) Blood
- (iv) Liver fluke
- (v) Glycolysis

(b)

- (i) Sycon. (Sycon is a sponge while hydra, sea anemone, jelly fish are cnidarians.)
- (ii) Centrosome. (Centrosome is present in an animal cell and is absent in a plant cell while cell wall, plastid and ribosomes are present in plant cells.)
- (iii) Vegetable peel. (Vegetable peel is biodegradable waste while plastic, discarded CDs, metals are non-biodegradable.)
- (iv) Jaundice. (Jaundice is a viral disease while cholera, leprosy, syphilis are bacterial diseases.)
- (v) Platypus. (Platypus is an egg-laying mammal which is an exception to the class mammalian. Horse, camel, and rabbit are mammals that give birth to young ones.)

(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) True
- (ii) False.
Correct Statement - In grafting, the plant receiving the bud or the shoot is called the stock.
- (iii) True
- (iv) False.
Correct Statement– The stigma of china rose is multi-lobed.
- (v) False.
Correct Statement - Embryo sac consists of seven cells, three antipodal cells; two synergids, one egg cell; one endosperm nucleus

(d)

- (i) Seeds without a distinct region of food storage are called **non-endospermic** seeds.
- (ii) The housefly transmits **typhoid** germs.
- (iii) **Lipase** is a fat-digesting enzyme.
- (iv) Ribosomes help in **protein synthesis**.
- (v) The opening through which water enters into a seed is called the **micropyle**.

(e)

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

(f)

(i)

Prokaryotic cell	Eukaryotic cell
1. Absence of a well-defined nucleus.	1. Presence of a well-defined nucleus.
2. Presence of one chromosome.	2. Presence of more than one chromosome.

(ii)

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

(iii)

Parenchyma	Sclerenchyma
1. Cells of parenchyma are oval or spherical.	1. Cells of sclerenchyma 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. They are voluntary muscles.	2. They are involuntary muscles.

(v)

Sweat	Sebum
1. Sweat is a secretion of the sweat gland.	1. Sebum is the secretion of the sebaceous gland.
2. It keeps the body cool.	2. It makes the skin soft and waterproof.

(g)

- (i) Larynx: Vibrations in the larynx produce sound.
- (ii) Sebum: Sebum keeps the skin smooth and prevents it from drying up.
- (iii) Apical meristem: Elongation of the root and the stem.
- (iv) Endosperm: Provides nourishment to the growing embryo.
- (v) Granules: Store fat, proteins and carbohydrates.

(h)

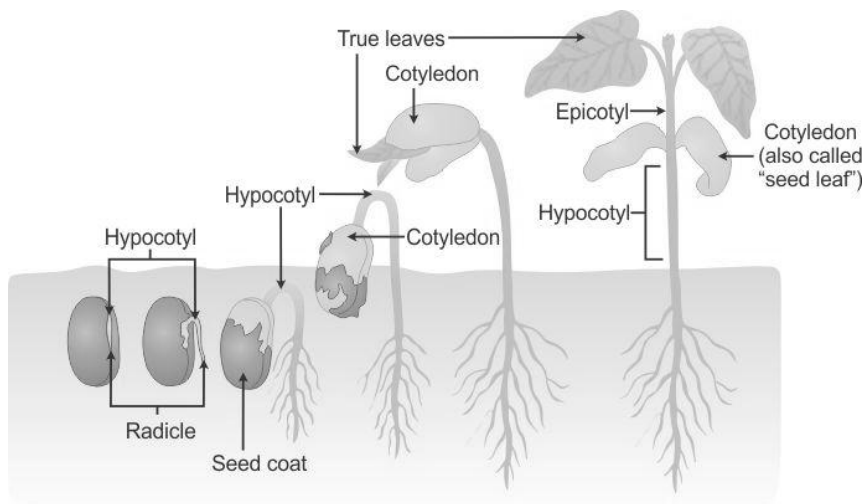
Name of the disease	Causative agent	Preventive method
Filaria	<i>Wuchereria bancrofti</i>	Killing mosquitoes and their larvae
Pneumonia	<i>Diplococcus pneumoniae</i>	Antibiotics
Typhoid	<i>Salmonella typhi</i>	Proper sanitation, anti-typhoid vaccination.
Tuberculosis	<i>Mycobacterium tuberculosis</i>	Vaccine-BCG
Gonorrhoea	<i>Neisseria gonorrhoeae</i>	Avoid sexual contact with an infected person.

SECTION-II

Answer 2

(a)

(i) Germination of a bean seed:



(ii) Binomial nomenclature is the practice of naming an organism by its generic and specific name. The first name is the genus name and it starts with a capital letter. The second name is the species name and it starts with a small letter. The scientific name of man is *Homo sapiens*.

(b)

(i) Adaptations of flowers which favour cross-pollination:

1. Unisexuality: The flowers may be either male or female, e.g. maize.
2. Dichogamy: In a bisexual flower, the anthers and the stigma mature at different times, e.g. rose.
3. Herkogamy: In a bisexual flower, when the stigma and the anthers mature at the same time, self-pollination is prevented by some barrier. e.g. orchids.
4. Self sterility: If the stigma receives the pollen from the same flower then the pollen is unable to germinate and grow. Only the pollen grains from different plants are able to germinate. e.g. orchids.

(ii) Difference between stomata and lenticel:

Stomata	Lenticel
1. Stomata are present in young stems and leaves.	1. Lenticels are present in older stems.
2. Guard cells are present.	2. Guard cells are absent.
3. They open during the daytime.	3. They are always open.
4. Maximum transpiration takes place through the stomata.	4. Very minimal transpiration occurs from lenticels.

(any two differences)

Answer 3

(a)

(i)

1. Disease: Amoebiasis
Causative organism: *Entamoeba histolytica*
Symptoms: Abdominal pain, nausea, etc.
2. Disease: Whooping cough
Causative organism: *Haemophilus pertussis*
Symptoms: Persistent cough, high fever.
3. Disease: Polio
Causative organism: Polio virus
Symptoms: Paralysis of the limbs.

(ii) When the diaphragm contracts, it becomes flat and increases the volume of the thoracic cavity, and helps in inspiration. When the diaphragm relaxes, it becomes dome-shaped; the volume of the thoracic cavity decreases and expiration takes place.

(b)

(i) Methods of food preservation:

1. Keeping the food at low temperature: Bacteria and fungi become inactive and do not grow at low temperature. Milk, food items, fruits, vegetables are kept in refrigerators.
2. Dehydration: If water is removed from the food items, bacterial growth can be prevented. This method is used for the preservation of grains, meat, fish, etc.
3. By using concentrated solutions: In this method, bacteria can be killed by plasmolysis. This method is used for the preservation of jams, pickles, canned food.

(ii) Characteristics of Phylum Coelenterata:

1. Coelenterates are found in fresh water or marine water, either free or sessile.
2. These animals are radially symmetrical.
3. They are diploblastic.
4. They possess nematoblasts which are used to capture the prey and for protection.

(any two characteristics)

Answer 4

(a)

1. Lipase
2. Ptyalin
3. Lactase
4. Enterokinase
5. Steapsin/Lipase

(b)

(i) Disadvantages of vegetative propagation:

1. There is no scope for producing a new variety.
2. Undesirable characters get transmitted from one generation to another.
3. The offspring produced are susceptible to the same diseases.
4. The daughter plants grow in clusters surrounding the parent plant which results in overcrowding and competition for resources.

(ii) Difference between earthworm and roundworm:

Earthworm	Roundworm
1. An earthworm belongs to Phylum Annelida.	1. A roundworm belongs to Phylum Nematelminthes.
2. It has a segmented body.	2. It has an unsegmented body.
3. It has a true body cavity.	3. It does not have a true body cavity, but possesses a pseudocoel.

Answer 5

(a)

(i) Mitochondrion

(ii) 1 - DNA

2 - F1-particle/Oxysome

3 - Cristae

(iii) Function of the mitochondrion:

It helps in cellular respiration, and is responsible for the release of energy (ATP) required for all the metabolic activities.

It is also responsible for the synthesis of respiratory enzymes.

(b)

(i) Krebs cycle

(ii) Haemoglobin

(iii) Anaerobic respiration

(iv) Apocarpous gynoecium

(v) Ciliated epithelium

Answer 6

(a)

(i)

Squamous epithelium	Stratified squamous epithelium
1. The cells of squamous epithelium are arranged in single layer.	1. The cells of stratified squamous epithelium are arranged in several layers resembling a brick wall.
2. It is situated in the lining of blood vessels, lung alveoli, oesophagus, the lining of the mouth and the inner lining of the cheek.	2. It is located as the outer protective covering all over the body surface and also forms an inner lining of cavities.
3. Its functions include transportation of substances through selectively permeable membrane, and protect body from skin infection.	3. Its functions are to provide protection to the underlying tissues which are subjected to continuous wear and tear.

(ii) Food chain: The sequential process of eating and being eaten is called a food chain.

Significance of the food chain:

1. In all types of food chains, one organism becomes the food of the other organism. As a result, a situation of eating and being eaten exists. This maintains a check on the population and a balance in the ecosystem.
2. Energy in the form of food is continuously transferred between different food chains. This helps to maintain the equilibrium in an ecosystem.
3. Food chains help us to understand the interaction and the interdependence of different organisms in an area.

(b)

(i) 1 – Cytoplasm

2 - Vacuole

3 - Intercellular spaces

- Nucleus

(ii) Cells of the parenchyma are isodiametric usually oval or spherical.

(iii) Parenchyma is present in the cortex of roots, and the mesophyll of leaves. It is also a ground tissue of stems.

(iv) Functions of parenchyma:

It stores food and is also the site of photosynthesis since they have chloroplasts.

Answer 7

(a)

(i) Part 1: Trachea: The tube which helps to take air in and out of the lungs. The ciliated epithelium of the inner wall of the trachea prevents entry of dust particles and other micro-organisms into the lungs.

Part 5: Pleural membrane: It protects the lungs against friction.

Part 7: Diaphragm: It helps in breathing by contraction and relaxation and thereby, increases and decreases the volume of the thoracic cavity.

(ii) The lining of the alveoli should be moist for easy diffusion of respiratory gases.

(iii) During inspiration, the diaphragm flattens. During expiration, the diaphragm becomes dome-shaped.

(b) Diagram of a knee joint:

