

**ICSE Board  
Class IX Biology  
Paper – 1 Solution**

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**SECTION-I**

**Answer 1**

**(a)**

- (i) Cell
- (ii) HIV (Human immunodeficiency virus)
- (iii) Mussel
- (iv) Serum
- (v) Fungi

**(b)**

- (i) Carpel
- (ii) Water
- (iii) Apple
- (iv) Hinge
- (v) Cytology

**(c)**

(i)

<b>Parasitic nutrition</b>	<b>Saprophytic nutrition</b>
Parasitic nutrition, is the mode of nutrition in which the organisms depend on a host for food and eventually, harm the host.	Saprophytic nutrition, is the mode of nutrition in which the organisms depend on dead and decaying organic matter.

(ii)

<b>Centrosome</b>	<b>Chromosome</b>
Centrosome is located near the nucleus in the cytoplasm.	Chromosome is located inside the nucleus.

(iii)

<b>Algae</b>	<b>Fungi</b>
Algae exhibit autotrophic nutrition.	Fungi exhibit heterotrophic nutrition.

(iv)

Respiration	Photosynthesis
Products formed from respiration, are carbon dioxide and water.	Products formed from photosynthesis, are glucose and oxygen (as a byproduct).

(v)

Stomata	Lenticels
Stomata bear bean shaped guard cells.	Guard cells are absent in lenticels.

(d)

- (i) **Pollination** - It is a process which involves the transfer of pollen grains from the anther to the stigma of the same flower or different flowers of the same species.
- (ii) **Apocarpous gynoecium** - The gynoecium which contains more than one carpel which is free is called apocarpous gynoecium.
- (iii) **Incubation period** - It is the period between the entry of germs and the appearance of the first symptom of the disease.
- (iv) **Antibiotics** - Antibiotics, are chemical substances produced by living organisms, that kill or stop the growth of disease-causing micro-organisms such as fungi and bacteria.
- (v) **Peristalsis** - The rhythmic contraction and relaxation of muscles of the oesophagus is called peristalsis.

(e)

- (i) True.
- (ii) False.  
Correct Statement - In mammals, the neck contains seven vertebrae.
- (iii) False.  
Correct Statement - Melanin gives colour to the skin.
- (iv) False.  
Correct Statement - Fats are essential components of food. (They provide energy to organisms.)
- (v) False.  
Correct Statement - Some bacteria are useful, while some are harmful to man.

(f)

Name of the disease	Causative agent	Preventive measure
1. Whooping cough	<i>Haemophilus pertussis</i>	DPT vaccine
2. Tetanus	<i>Clostridium tetani</i>	Immunisation
3. Malaria	<i>Plasmodium</i>	Destruction of mosquitoes
4. AIDS	HIV virus	Avoid sexual contact with the infected person
5. Diphtheria	<i>Corynebacterium diphtheriae</i>	DPT vaccine

(g)

- (i) Rat
- (ii) Ostrich
- (iii) Fry
- (iv) Penicillin
- (v) *Bryophyllum*

(h)

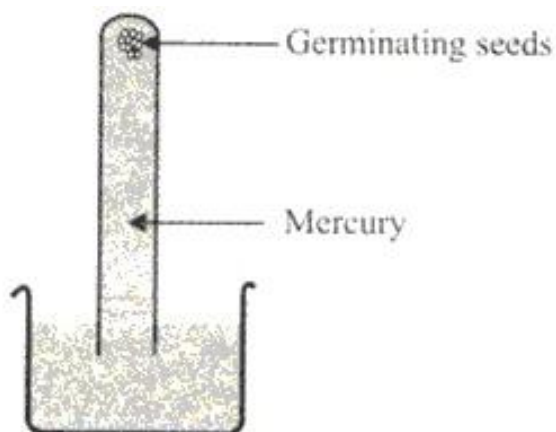
- (i) Chloroplast
- (ii) Chloroplast is present in plant cells.
- (iii) Chloroplast is the site of photosynthesis.
- (iv) 1 - Outer membrane  
2 - Inner membrane  
3 - Cytoplasm  
4 - Granum

## SECTION-II

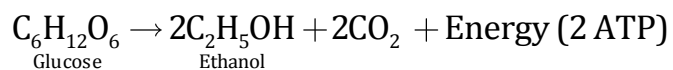
### Answer 2

(a)

- (i) The experimental set-up demonstrates anaerobic respiration.
- (ii) Corrected diagram:



- (ii) Chemical equation for the process:



**(b)**

- (i) **Stigma** – It receives the pollen grains during pollination.
- (ii) **Chromosomes** - They transmit hereditary characters from the parents to the offspring.
- (iii) **Phloem** - It conducts manufactured food from the leaves to the other parts of the plant.
- (vi) **Sweat gland** - They secrete sweat which is an excretory product of the body.
- (iv) **Roughage** - It helps in keeping the faecal matter soft and thereby prevents constipation.

### **Answer 3**

**(a)**

- (i) AIDS: Acquired Immuno Deficiency Syndrome
- (ii) BCG: Bacillus Calmette Guerin
- (iii) DPT: Diphtheria, pertussis and tetanus (vaccine)
- (iv) WHO: World Health Organisation
- (v) WBC: White blood cell (corpuscle)

**(b)**

- (i) **Cross pollination** - The transfer of pollen grains from the anther of one flower to the stigma of another flower of the same species is called cross pollination.
- (ii) **Immunity** – Immunity is the resistance to the onset of a disease after infection by harmful germs.
- (iii) **Thallophyta** – Thallophyta is a group of plants in which the plant body is not differentiated into root, stem, and leaves. E.g. Algae, Fungi.
- (iv) **Radial symmetry** – It is a form of symmetry in which the identical parts are arranged in a circular fashion around a central axis.
- (v) **Yeast** is a unicellular fungus which is used in the baking industry or for wine production, etc.

#### Answer 4

##### (a)

- (i) Nitrifying bacteria convert ammonia into nitrites during nitrogen fixation and this process is called nitrification.
- (ii) Harmful effects of bacteria:
  - 1. Bacteria carry out the process of decay or fermentation, resulting in the spoilage of food materials.
  - 2. Bacteria cause many diseases in animals and plants. For example, *Vibrio cholera* causes cholera in humans. *Xanthomonas malvacearum* causes angular leaf spot in the cotton plant.
  - 3. Some bacteria are also used by some countries in biological warfare to make bombs which when exploded release disease-causing germs. For example – Anthrax bacteria.

##### (b)

- (i) Striated muscles
- (ii) 1- Dark bands/A-bands  
2-Light bands/I-bands
- (iii) Striated muscles are attached to the bones of limbs.
- (iv) Characteristics of striated muscles:
  - 1. Muscles fibres are multi-nucleated.
  - 2. Muscle fibres are long, cylindrical and unbranched.
  - 3. The cells are enclosed in connective tissue sheaths in the form of bundles. These sheaths form tendons that connect muscles with the bones.
  - 4. These muscles are voluntary.

#### Answer 5

##### (a)

- (i) Nucleus
- (ii) Importance of the nucleus:
  - 1. The nucleus is the controlling centre of the cell. It regulates all metabolic activities of the cell.
  - 2. It also regulates cell division.
  - 3. It is concerned with the transmission of heredity traits from parents to offspring.
- (iii) The nucleus is not present in all cells. Human RBCs do not contain a nucleus.

**(b)**

(i) Health problems in India:

**1. Food- and water-borne diseases:**

Contaminated food and water cause several diseases.

Water-borne diseases occur due to contaminated water from hand pumps or mixing of untreated sewage with river water.

**2. Insect- and air-borne diseases:**

Lack of cleanliness leads to breeding of houseflies and mosquitoes which are carriers of certain diseases.

**3. Lack of medical facilities:**

Lack of medical facilities especially in rural areas leads to unavoidable deaths and damage to health. Lack of knowledge and superstitious beliefs also delay timely treatment which may result in serious consequences.

(ii) Functions of WHO:

- To promote and support projects for research on diseases
- To collect and supply information about the occurrence of diseases of an epidemic nature such as cholera, plague and yellow fever

**Answer 6**

**(a)**

(i) Hibiscus (*Rosa sinensis*)

(ii)

1 - Corolla (petal)

2 - Stigma

3 - Stamen

4 - Ovary

(iii) Mechanism of pollination in the hibiscus flower:

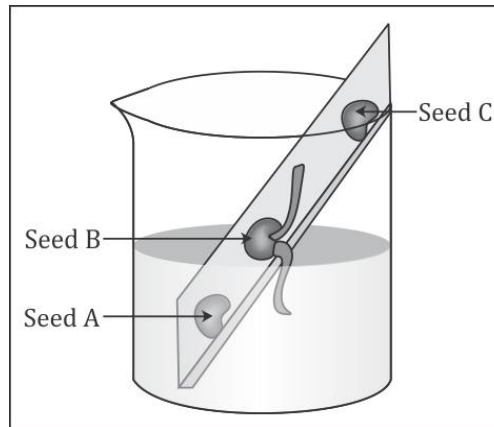
Hibiscus is a flower with colourful corolla.

Insects get attracted to the nectar and the coloured corolla. Hence, they act as agents of pollination for the hibiscus flower.

When insects suck the nectar, pollen grains stick to their legs and are carried to other plants where they germinate.

**(b) Experiment to prove that air, water and temperature are needed for the germination of seeds:**

1. The apparatus needed for the experiment is a beaker partially filled with water, a wooden plate, three bean seeds and pins.
2. The procedure of the experiment is as follows:



- Take a beaker half filled with water.
  - Take a wooden plate and pin three bean seeds on it.
  - Keep the wooden plate obliquely in the beaker in such a way that seed A is completely immersed in water, seed B is half inside the water and half out of the water, and seed C is completely out of water.
  - Keep the beaker in a warm place for a few days.
3. Observation:
- Seed A begins to germinate, but later stops due to lack of oxygen in water.
  - Seed B germinates.
  - Seed C does not germinate due to lack of water.

**Answer 7**

**(a)**

**(i) Merits of local defence systems:**

1. Local defence systems start working instantaneously.
2. These systems are not dependent on previous exposure to infections.
3. They are effective against a wide range of potentially infectious agents.

**(ii) Mosquitoes can be controlled by the following methods:**

1. Breeding places of mosquitoes can be destroyed such as small ponds, puddles, etc.
2. Greasy oil or kerosene can be poured on water. These oils form a thin film on the surface of water which kills the larvae and pupae of mosquitoes when they come on the surface to breathe.
3. *Gambusia* fish can be introduced in ponds which eats the larvae of mosquitoes.

**(b)**

(i) Characteristics of fish:

1. Fish are poikilothermic i.e. cold blooded.
2. They have a streamlined body.
3. They breathe through gills.
4. They have paired and unpaired fins for locomotion.
5. Their heart is two chambered.
6. Fish are oviparous and the development is external.

(ii) Structure of a maize grain:

