

**ICSE Board
Biology
Sample Paper – 3**

Time: 2 hrs

Total Marks: 75

General Instructions:

1. **All** questions are **compulsory**.
 2. Questions 1 to 15 carry one mark each.
 3. Questions in 2 A and B carry one mark each.
 4. Questions in 3 A carry one mark each and B carries 5 marks.
 5. Question 4 A and B carries 5 marks each.
 6. Questions in 5 A and B carry one mark each.
 7. Questions in 6A and B carry one mark each.
 8. Question 7 A and B carry five marks each.
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Question 1

Choose the correct answer out of the four available choices given below each question. [15]

1. The leaves of _____ can give rise to a new plant.
 - (a) Mango
 - (b) *Bryophyllum*
 - (c) *Bougainvillea*
 - (d) Rose
2. The exocrine part of pancreas secretes _____.
 - (a) Bile juice
 - (b) Pancreatic juice
 - (c) Gastric juice
 - (d) None of the above
3. The heart is a muscular organ made up of _____ muscles.
 - (a) Cardiac
 - (b) Skeletal
 - (c) Smooth
 - (d) Both 1 and 2
4. Which of the following vaccines contains killed germs?
 - (a) TAB vaccine for typhoid
 - (b) Salk's vaccine for poliomyelitis
 - (c) Vaccine for rabies
 - (d) BCG vaccine for tuberculosis

5. Whooping cough is a/an _____.
(a) Droplet infection
(b) Food borne infection
(c) Air borne infection
(d) Water borne infection
6. Reflex actions are under the control of the _____.
(a) Brain
(b) Medulla oblongata
(c) Spinal cord
(d) Cerebellum
7. Grass → _____ → Tiger.
Which of the following best fits in the above food chain?
(a) Deer
(b) Eagle
(c) Bacteria
(d) Lion
8. The term 'ecosystem' is derived from the Greek word 'oikos' meaning
(a) Body weight
(b) Food
(c) House
(d) Size
9. A butterfly in its development from larva to adult shows _____.
(a) Fertilisation
(b) Metamorphosis
(c) Multiplication
(d) Both (1) and (2)
10. Which of the following changes are not associated with adolescence?
(a) Change in body shape
(b) Change in voice
(c) Increase in height
(d) Decreased activity of sweat and sebaceous glands
11. The technique of crossing two individuals of different varieties is called _____.
(a) Tissue culture
(b) Self pollination
(c) Cross pollination
(d) Hybridisation

12. Which one of the following favours the fastest transpiration rate?
- (a) A cool, humid, windy day
 - (b) A hot, humid, windy day
 - (c) A hot, humid, still day
 - (d) A hot, dry, windy day
13. _____ is a cross-breed cow milch species.
- (a) Red sindhi
 - (b) Karan swiss
 - (c) Jersey
 - (d) Sahiwal
14. The absence or low number of clotting factors results in a rare condition called_____.
- (a) Anaemia
 - (b) Sickle cell anaemia
 - (c) Haemophilia
 - (d) Filaria
15. Marasmus is caused due to lack of _____.
- (a) Carbohydrates
 - (b) Proteins
 - (c) Fats
 - (d) Both (1) and (2)

Question 2

(A) Mention the food constituent which may be lacking in ones diet, in case of the following: [5]

1. A child having rickets
2. A person suffering from scurvy
3. A person suffering from beri-beri
4. A child suffering from kwashiorkor
5. A person suffering from anaemia

(B) Fill in the blanks and rewrite the sentences: [5]

1. Reproduction in spirogyra is by means of _____.
2. The colourless fluid that flows within the lymphatic system is called _____.
3. Kwashiorkor is caused due to the deficiency of _____.
4. _____ cells produce testosterone.
5. The period of life when the body undergoes development leading to reproductive maturity is called _____.

Question 3

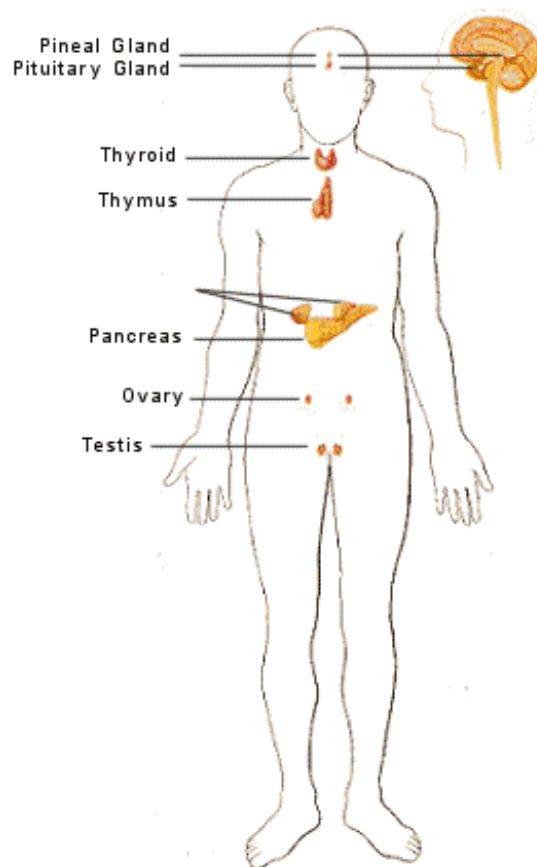
(A) Match the items in column I with the appropriate items in column II.

[5]

Column A	Column B
1. Diabetes	a) oestrogen
2. Bread mould	b) uses energy
3. Ovaries	c) insulin
4. Active transport	d) liquid component of blood
5. Plasma	e) spores

(B) Study the diagram below and answer the questions that follow:

[5]

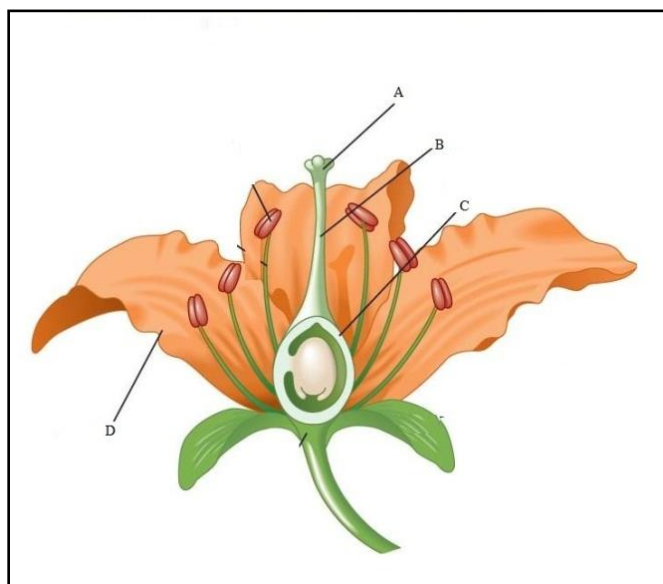


1. Name the gland above the kidney?
2. Name two glands that are associated with the digestive system through their secretions? (endocrine glands)
3. Which hormone is made up of iodine?
4. What is a mixed gland? Give an example?

Question 4

(A)

[5]



- i. Name the parts A, B, C and D.
- ii. State the function of part A.

(B) Draw a neat diagram of the following and only, label the parts mentioned against it.[5]

1. Nerve cell
2. Section of artery and vein

Question 5

(A) Give one point of difference between the following on the basis of what is given in the brackets: [5]

1. Fragmentation and regeneration (process)
2. Endocrine glands and exocrine glands (secretions)
3. Artery and vein (muscular wall)
4. Kharif crops and rabi crops (season of cultivation)
5. Xylem and phloem (substances transported)

(B) Complete the correlation.

[5]

1. Fresh water fish: Tilapia:: _____: Marine water fish
2. Millets: cereals:: Hemp: _____
3. Bombyx mori: Sericulture:: Apiculture: _____
4. Fry: Nursery tank:: Rearing tank: _____
5. Fowl Pox: Ranikhet:: _____: Bacterial disease

Question 6

(A) What is a reflex arc? Answer the following in the correct sequence: [5]

1. A sensory neuron conducts the impulse from the receptor to the spinal cord.
2. A receptor receives a stimulus.
3. The motor neuron passes the impulse to an effector, which carries out the action in response to the stimulus.
4. An association neuron transmits the impulse from the sensory neuron to a motor neuron.

(B) Define the following terms: [5]

1. Gestation period
2. Diffusion
3. Apiculture
4. Blood transfusion
5. Ecosystem

Question 7

(A)

1. Give scientific reasons: [3]
 - (a) Adolescents need to plan their diet and lifestyle to maintain a healthy body.
 - (b) Yeast is used in bakery products.
 - (c) The scrotum lies outside the body cavity.
2. A man was suffering from diabetes. He was urinating frequently in copious amounts resulting in loss of water. Which type of diabetes is this and which hormone is responsible for it? [2]

(B)

1. What is a food pyramid? What is the role of food pyramid in the functioning of ecosystems? [3]
2. Explain the method of asexual reproduction in plants by any one sub-aerial stem. (Draw a diagram if necessary). [2]

Solution

Question 1

1. (b) *Bryophyllum*

(*Bryophyllum* is a plant that reproduces by means of vegetative reproduction. The leaf is the vegetative part for reproduction. *Bryophyllum* leaves bear buds on their margins which give rise to new plants, when the leaf falls and the buds come in contact with soil.)

2. (b) Pancreatic juice

(The exocrine part of the pancreas secretes pancreatic juices into the small intestine, where it helps in digestion of carbohydrates, proteins and fats.)

3. (a) Cardiac

(Cardiac muscles are specialised muscles that make up the heart. They help the heart to constantly pump blood through the body.)

4. (d) BCG vaccine for tuberculosis

(BCG vaccine for tuberculosis contains living weakened germs and not killed germs.)

5. (a) Droplet infection

(Whooping cough is an infectious disease, which spreads by means of droplets released from an infected person while coughing and sneezing.)

6. (c) Spinal cord

(Reflex action is a quick response generated to a stimulus. The pathway travelled by the impulse in a reflex action is called a reflex arc. In a reflex action, the brain is not involved, since for the reflex action to occur there is no thinking process involved, and the action is taken to prevent damage to the organ or the body.)

7. (a) Deer

(In the given food chain, there is a producer (grass) and a carnivore (tiger). Hence, the missing link is a herbivore which is deer. Rest of the organisms are not herbivores.)

8. (c) House

(The term 'ecosystem' is derived from the Greek word 'oikos' which means a house, which is a dwelling place with inhabitants living together and interacting with one another in some definite ways.)

9. (b) Metamorphosis

(Metamorphosis is a process, in which the organism that hatches from the egg or at birth, is different from that of the parent organism, and undergoes a series of changes during growth and developmental stages, to resemble its parent organism. A butterfly at birth hatches from the egg in the form of a larva then develops into a pupa, which finally develops into an adult butterfly.)

10. (d) Decreased activity of sweat and sebaceous glands

(During adolescence, the secretion of sweat and sebaceous glands increases. This results in acne and pimples on the face of adolescents.)

11. (d) Hybridisation

(Hybridisation is the technique by which two different individuals are crossed together to give rise to an organism that resembles and possess the qualities of both the parent organism. It is beneficial as it helps combining qualities of different organisms in one organism to produce better individuals.)

12. (d) A hot, dry, windy day

(On a hot, dry and windy day, the rate of transpiration will be maximum as all the mentioned atmospheric conditions facilitate the movement of water from the plant to the atmosphere.)

13. (b) Karan swiss

(Karan swiss is a cross breed cow species, in which the milk yield is increased by 2-3 times.)

14. (c) Haemophilia

(Haemophilia is a rare genetic disorder in which the affected individual has low or no clotting factors in his/her blood. This results in a loss in the ability of the blood to clot in case of injuries, and the person bleeds out continuously.)

15. (d) Both (1) and (2)

(Severe deficiency of carbohydrates and proteins in the body causes marasmus.)

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.

Question 2

(A)

1. A child having rickets: Vitamin D
2. A person suffering from scurvy: Vitamin C
3. A person suffering from beri-beri: Vitamin B₁
4. A child suffering from kwashiorkor: Proteins
5. A person suffering from anaemia: Iron

(B)

1. Reproduction in spirogyra is by means of fragmentation.
2. The colourless fluid that flows within the lymphatic system is called lymph.
3. Kwashiorkor is caused due to the deficiency of proteins.
4. Interstitial cells produce testosterone.
5. The period of life when the body undergoes development leading to reproductive maturity is called adolescence.

Question 3

(A)

Column A	Column B
1. Diabetes	c) insulin
2. Bread mould	e) spores
3. Ovaries	a) oestrogen
4. Active transport	b) uses energy
5. Plasma	d) liquid component of blood

(B)

1. Adrenal gland
2. Pancreas and thyroid gland
3. Thyroxine
4. A gland which has both exocrine and endocrine properties is known as a mixed gland.
Example - Pancreas.

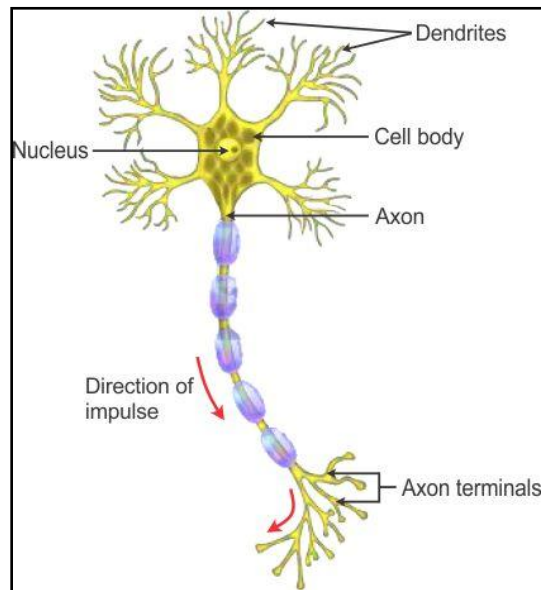
Question 4

(A)

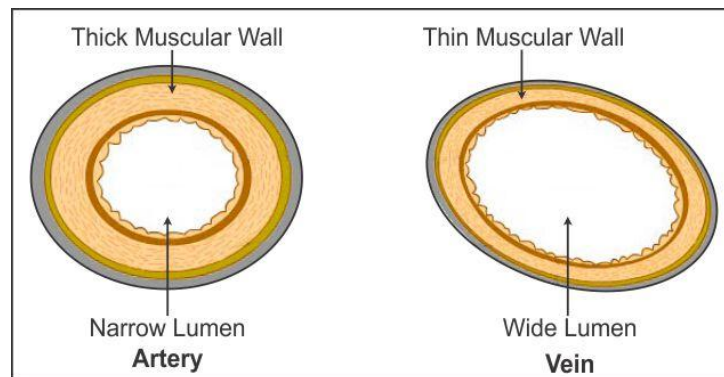
1. A – Stigma, B – Style, C – Ovary, D – Corolla (Petals)
2. Function of part A (Stigma): It is a disc shaped structure, which receives the pollen during pollination.

(B)

1. A nerve cell:



2. Section of an artery and a vein:



Question 5

(A)

1. Fragmentation and regeneration (process)

Fragmentation	Regeneration
Certain organisms simply break up into smaller pieces upon maturation. These pieces or fragments grow into new individuals. This process is known as fragmentation.	Sometimes when an organism loses its part, it has the ability of regenerating that part. Also, the broken off part can regenerate into a new individual. This method of reproduction is called regeneration.

2. Endocrine glands and exocrine glands (secretions)

Endocrine glands	Exocrine glands
Endocrine glands directly pour their secretions into blood.	The secretions from exocrine glands are sent to target organs through their ducts.

3. Artery and vein (muscular wall)

Artery	Vein
An artery has elastic and thick muscular walls and a narrow cavity.	A vein has thin muscular walls and a broad cavity.

4. Kharif crops and rabi crops (season of cultivation)

Kharif crops	Rabi crops
Kharif crops are grown in the monsoon (June) and harvested in autumn (October).	Rabi crops are grown in November and are harvested in April.

5. Xylem and phloem (substances transported)

Xylem	Phloem
Xylem conducts water upwards in a plant.	Phloem conducts manufactured food from the leaves to the different parts of the plant.

(B)

1. Fresh water fish: Tilapia::Bombay duck: Marine water fish
2. Millets: cereals:: Hemp: Fibre yielding crop
3. Bombyx mori: Sericulture:: Apiculture: *Apis indica*
4. Fry: Nursery tank::Rearing tank: Fingerling
5. Fowl Pox: Ranikhet:: Coryze: Bacterial disease

Question 6

(A)

Reflex arc: The path which is travelled by the impulse during a reflex action is called a reflex arc.

The correct sequence is:

2. A receptor receives a stimulus.
1. A sensory neuron conducts the impulse from the receptor to the spinal cord.
4. An association neuron transmits the impulse from the sensory neuron to a motor neuron.
3. The motor neuron passes the impulse to an effector, which carries out the action in response to the stimulus.

(B)

1. Gestation period: It is the period of development of the embryo inside the uterus.
2. Diffusion: Diffusion is the free movement of molecules of a substance from a region of its higher concentration to a region of its lower concentration, until the concentration in both regions is equal.
3. Apiculture: It is the artificial rearing of honey bees or the maintenance of colonies of honey bees by humans to obtain honey and other commercially important products.
4. Blood transfusion: It is the transfer of blood from one person to another person.
5. Ecosystem: It is a self-contained area composed of all different living organisms living in it, interacting with each other as well as with the physical conditions such as sunlight, soil, water, climatic factors, etc. prevailing in the area.

Question 7

(A)

1.

- (a) It is important to eat the right kind of food while growing. This helps the bones, muscles and other parts of the body to get enough nourishment for their growth. Hence, adolescents need to plan their diet and lifestyle to maintain a healthy body.
- (b) Yeasts undergo anaerobic fermentation and produce carbon dioxide and ethyl alcohol. The formation of carbon dioxide raises the bread dough or cakes. They also multiply very fast. Therefore, yeast is used in bakery products.
- (c) Sperms, for their survival, require a lower temperature. Since the scrotum is outside the body it maintains a suitable temperature for the testes, which is 2 to 30°C below the body temperature. Therefore, the scrotum containing the testes lies outside the body cavity.

2. A man was suffering from diabetes. He was urinating frequently in copious amounts resulting in loss of water. This is diabetes insipidus. It is caused due to a deficiency of the anti-diuretic hormone (ADH).

(B)

1. A graphical representation of various trophic levels of a food chain in an ecosystem is called an ecological pyramid or a food pyramid.

Role of food pyramid in the functioning of ecosystems:

- The trophic levels in a food chain can be explained with the help of a food pyramid.
 - The ecological pyramids help us to understand the structure, functional diversity and energy conversion efficiency of ecosystems.
2. Offset is a shoot emerging from a bud on the main stem. As it grows, it falls off from the main bud and grows into an independent plant. This is an example of asexual reproduction in plants by sub-aerial stem.

