

ANSWER KEY (SET 2)

BIOLOGY

CHAPTER – CONTROL AND COORDINATION

Q1. The following question consists of two statements – Assertion (A) and Reason (R). Answer the question selecting the appropriate option given below: [1]

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

Assertion (A): Failure of secretion of growth hormone in the adults causes dwarfism

Reason (R): Growth hormone stimulates the body growth and elongation of long bones.

Ans. (d) A is false but R is true.

Q2. If Anil's cerebellum is damaged due to injury, what are the two things in his body that might not work well because of the damage? [2]

Ans. The cerebellum is responsible for precision of voluntary actions and maintaining the posture and balance of the body. Such activities in his body might be affected if Anil's cerebellum is damaged due to injury.

Q3. a) Plants do not have any nervous system, yet if we touch a sensitive plant, some observable changes take place in its leaves. Explain how this plant responds to the external stimuli and how it is communicated.

b) Name the hormone that needs to be administered to:

- i. increase the height of a dwarf plant
- ii. cause rapid cell division in fruits and seeds

[2+1=3]

Ans. a) Plant cells change shape by changing the amount of water in them, resulting in swelling or shrinking, and therefore in changing shapes. This is how sensitive plants fold their leaves in response to touch.

Plants use electrical-chemical means to convey this information from cell to cell.

b) i. Gibberellin

ii. Cytokinin

Q4. Consider the following scenarios:

- A. While cooking, Ravi accidentally touched a hot pan and instantly pulled his hand away without any conscious thought.
- B. Later, when Ravi wanted to pick up a book from his shelf, he thoughtfully planned and executed the movement with care.

- a) Explain the difference between the action taking place in scenario A and B.
- b) Enlist the stages in the pathway of the nerve signal involved in the action taking place in A.
- c) Which part of the nervous system primarily mediates response taking place in A.

OR

c) Which part of the brain is mainly involved in coordinating actions taking place in B. [1+2+1=4]

Ans. a) The immediate action when Ravi touched the hot pan is a reflex action, an automatic and rapid response to a stimulus. On the other hand, the deliberate action of picking up a book is a voluntary action.

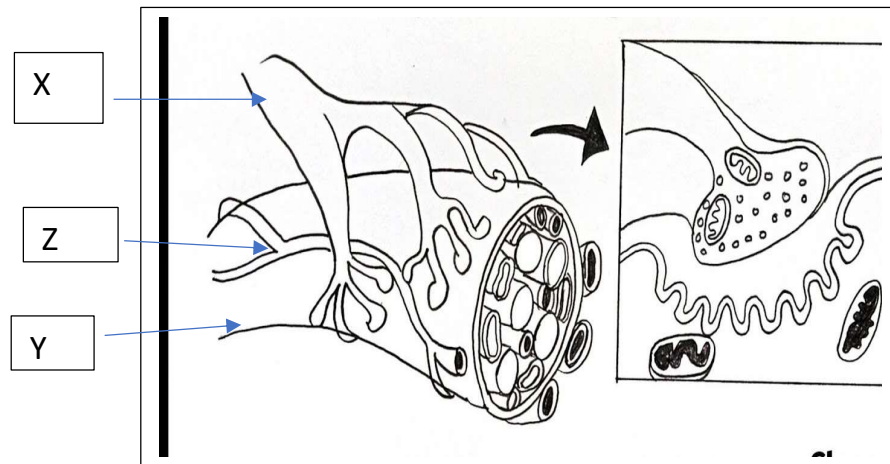
b) Hot plate(stimulus) → Receptors in skin → Sensory neurons → spinal cord → Motor neurons → Effectors (muscles in hand) → Removal of hand(response).

c) Spinal cord

OR

c) Forebrain

Q5. a) Identify the given figure and label the following parts.



b) In animals, hormones can be secreted by one organ and act on multiple organs. Justify this statement by explaining the effect of adrenaline on any two organs in our body.

c) Why is it important for the pancreas to secrete insulin in proper amounts? [2+2+1=5]

Ans. a) Neuromuscular junction.

X – axon; Y – muscle fibre; Z – capillary/nerve endings

b) Adrenaline causes the heart to beat faster, resulting in supply of more oxygen to our muscles. The blood to the digestive system and skin is reduced due to contraction of muscles around small arteries in these organs. This diverts the blood to our skeletal muscles. The breathing rate also increases because of the contractions of the diaphragm and the rib muscles. [ANY TWO EFFECTS]

c) Insulin helps in regulating blood sugar levels. If it is not secreted in proper amounts, the sugar level in the blood rises causing many harmful effects.

