

Syllabus

- *Control and co-ordination in animals and plants : Tropic movements in plants; Introduction of plant hormones; Control and co-ordination in animals, Nervous system; Voluntary, involuntary and reflex action; Chemical co-ordination: animal hormones.*

Quick Review

- All the living organisms respond and react to changes in the environment around them.
- The changes in the environment to which the organisms respond and react are called stimuli such as light, heat, cold, smell, touch etc.
- Both plants and animals respond to stimuli but in a different manner.

Control and Coordination in Animals

- It is brought about in all animals with the help of two main systems :
 - (a) Nervous system
 - (b) Endocrine system

Nervous System

- Control and coordination are provided by nervous and muscular tissues.
- Nervous tissue is made up of an organized network of nerve cells or neurons, and it is specialized for conduction of information via electrical impulses from one part of the body to another.
- **Nervous system** is the system of conducting tissues that receives the stimulus and transmits it to other parts of the body forming a network of nerves.
- The units which make up the nervous system are called **nerve cells or neurons**.
- The **receptors** pass the information to the brain through a type of nerve cells called sensory neurons.
- **Motor neurons** transmit the information from the brain to the effector organs, mainly muscles and glands.
- **Nerve Impulse** : It is the information in the form of chemical and electrical signals passing through neurons. These impulses are carried by dendrites towards the cell body.
- **Neuromuscular Junction** : It is the point where a muscle fibre comes in contact with a motor neuron carrying nerve impulses from the central nervous system. The impulses travel from the neuron to the muscle fibres by means of neurotransmitter in the same way as the transmission of impulses across a synapse between two neurons.
- **Voluntary Action** : These are the actions which need thinking and are performed knowingly *i.e.* these are controlled by conscious thought.
Example : Speaking to a friend, writing a letter etc.
- **Involuntary Action** : These are not under the control of the will of an individual and are an automatic response to a stimulus which is not under the voluntary control of the brain.
Example : Touching a hot plate unknowingly.

Reflex Action

- Reflex action is a quick, sudden and immediate response of the body to a stimulus. E.g., Knee jerk, withdrawal of hand on touching a hot object.
- **Reflex arc** : The pathway through which nerve impulses pass during reflex action is called reflex arc.

TOPIC - 1

Tropic Movements and Introduction of Plant Hormones ... P. 157

TOPIC - 2

Control and Co-ordination in Animals P. 161

No.	Gland	Hormones	Functions	Target Site
1.	Hypothalamus	(i) Releasing hormones (RH) (ii) Inhibiting hormones	Regulates secretion of pituitary hormones.	Pituitary gland
2.	Pituitary Gland	(i) Growth hormone (GH)	Controls growth-dwarfism & gigantism.	Most tissues
4.	Thyroid Gland	(i) Thyroxin (ii) Triiodothyronine (iii) Thyrocalcitonin (TCT)	Basal metabolic rate, RBC formation. Regulated Ca level.	Body tissues
7.	Adrenal Gland	(i) Adrenaline (ii) Nor adrenaline (iii) Corticoids	Increase alertness, pupillary dilation, piloerection, sweating and heart beat.	Body tissues
8.	Pancreas	(i) Insulin	Regulates glucose homeostasis, stimulates glycogenesis, controls carbohydrate metabolism	Tissues
		(ii) Glucagon	Maintains glucose levels, stimulates gluconeogenesis. Release of sugar from liver.	
9.	Testis	(i) Testosterone (ii) Androgens	Develops male reproduction organs & accessory sexual characters. Influence male sexual behaviour.	Male body tissues
10.	Ovary	(i) Estrogen	Develops female reproductive organs, accessory sexual characters & female secondary behaviour.	Female body tissues
		(ii) Progesterone	Support pregnancy, stimulates milk secretion.	

- **Plant Hormones :** Are chemical compounds which help to coordinate growth, development and responses to the environment.

Main plant hormones are :

- (a) **Auxin :** Synthesized at shoot tip,
Helps the cells to grow longer
Involved in phototropism
- (b) **Gibberellin :** Helps in the growth of the stem
- (c) **Cytokinins :** Promotes cell division
Present in greater concentration in fruits and seeds
- (d) **Abscissic Acid :** Inhibits growth
Cause wilting of leaves
Stress hormone

TOPIC-1

Tropic Movements and Introduction of Plant Hormones

Very Short Answer Type Questions

(1 mark each)

- Q.1. What are plant hormones ? [NCERT]

Ans. Plant hormones are organic substances produced naturally in higher plants, which control the

growth and other physiological functions at a site far away from the place of secretion and required in very small amount.

Q.2. What is meant by tropic movements ?

[Board Term-I, Set-44, 2012]

Ans. Plant growth movements in response to stimuli from a particular direction are called tropic movements. 1

Q.3. Define Phototropism.

[Board Term-I, Set-55, 2011]

Ans. Movement or bending of the shoot towards light is called phototropism. 1

Q.4. Give one example of Chemotropism.

[Board Term-I, Set-31, 2012]

Ans. The growth of pollen tube towards ovule. 1

Q.5. Where is auxin synthesized in plants ?

[DDE-2017]

Ans. Auxin is synthesized in apex of the plants. 1

Q.6. State the main functions of abscisic acid in

plants.

[Board Term-I, Set-89, 2012]

Ans. Abscisic acid inhibits the growth of plants. 1

Q.7. Give an example of plant hormone that promote growth. [NCT-2014]

Ans. Gibberellins help in the growth of stem. 1

Q.8. How do the shoot and roots of a plant respond to the pull of earth's gravity ?

[Board Term-I, Set-38, 2012]

Ans. Roots grow downwards, towards gravity while shoot usually grow upwards and away from earth. 1

Q.9. How does chemical co-ordination occur in plants ? [NCERT]

Ans. Chemical co-ordination in plants are achieved by plant hormones, that help to co-ordinate growth, development and responses to the environment. 1

Short Answer Type Questions-I

(2 marks each)

Q.1. How does auxin promote phototropism ?

[Board Term I, Set-WDCXXOV, 2016]

Ans. Auxin - a plant hormone synthesised at the shoot tips - helps the cells to grow longer. When light is coming from one side of the plant, auxin diffuses towards the shady side of the shoot.

This concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light. Thus the plant appears to bend towards light while growing this phenomenon is called phototropism.

[CBSE Marking Scheme, 2016]

Detailed Answer :

Auxin is the hormone which is usually synthesised in the young tip of roots and shoots. When light is coming from one side of the plant, it diffuses towards the shady side of the shoot which stimulates the cells to grow longer, resulting in the bending of shoot towards light, thus auxin promotes phototropism. 2

Q.2. How do auxins promote the growth of a tendril around a support ? [NCERT]

Ans. Auxins promote cell elongation and are present at the shoot tip.

When the tendril comes in contact with a support, auxin stimulates faster growth of the cells on the opposite sides. Thus, the tendril coils around the support. 2

Q.3. Why is Absciscic acid called as stress hormone ?

[KVS 2017] [DDE 2017]

Ans. Absciscic acid is called stress hormones as it induces various responses in plants against stress condition.

It induces the closure of the stomata during water stress. It promotes seed dormancy and ensures seed germination during favourable conditions.

Q.4. How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light ? [NCERT]

Ans. Movement of leaves of the sensitive plant or *Mimosa Pudica* or touch-me-not is a response to touch (stimulus). The movement is not dependent upon growth of the plant, while the movement of shoot of a plant towards light is growth dependent movement. 2

Q.5. What are nastic and curvature movements ? Give one example of each. [Board Term-I 2009]

Ans. Nastic Movement : They are non-directional curvature movements of turgor or growth, when the movements are determined by the structure of the responding organ irrespective of the direction of structure which is generally diffused. *e.g.*, Drooping and folding of leaves in sensitive plant in response to shock (seismonasty).

Curvature Movement : They are changes in orientation of some plant parts in relation to others caused by intrinsic or external stimuli, *e.g.*, sleep movement or nyctinasty of legume leaves, bending of stem towards light. 1 + 1

Q.6. Explain the cause of shoots of the plant bending towards light. [Board Term I Comptt. 2008]

Ans. Stems are positively phototropic and bend towards the direction of light. The movement is due to occurrence of more auxin on the darker side and lesser auxin on the illuminated side. As a result, there is more growth on the darker side which causes the stem to bend towards light. 2

Short Answer Type Questions-II

(3 marks each)

Q.1. What is the significance of tropic movements in plants ? Explain any two types of tropic movements ? (DDE 2017)

Ans. Tropic movement is important due to following reasons :

(i) They serve as protective function and helps in developing a sudden response for a change.

(ii) Helps in growth and development of plants. 1

Seismonastic Movement : These movements are brought about by mechanical stimuli such as contact with a foreign body, fast wind and rain drops etc. These movements are seen in stigmas, stamens and leaves of many plants.

Photonastic Movement : These movements are induced by fluctuations in the intensity of light. Such movements are exhibited by flowers of several plants. 1+1

Q.2. What is phototropism ? Describe an activity to demonstrate phototropism.

[(NCERT) DDE-2014;

Board Term I, Set-WH1SGOB, 2014]

OR

(a) Write an activity to show phototropism and geotropism.

(b) What type of movement is shown by mimosa plant leaves when touched with a finger.

[Board Term I, Set-WJ7QPA9, 2013]

Ans. (a) Phototropism : It is the growth which responds to a light stimulus. The cells on the plant that are farthest from the light have a chemical called auxin that reacts when phototropism occurs.

Geotropism : Refer to Ans. 2. SAQ-II, Pg. 161

Activity to demonstrate Phototropism :

- (a) (i) Fill a conical flask with water.
- (ii) Cover the neck of the flask with a wire mesh.
- (iii) Keep two or three freshly germinated bean seeds on the wire mesh.
- (iv) Take a cardboard box which is open from one side.
- (v) Keep the flask in the box in such a manner that the open side of the box faces light coming from a window.
- (vi) After two or three days, you will notice that the shoots bend towards light and roots away from light.
- (vii) Now turn the flask so that the shoots are away from light and the roots towards light.
- (viii) Leave it undisturbed in this condition for a few days.



(b) Folding up of the leaves of mimosa plant is an example of nastic movements or seismonasty.

[CBSE Marking Scheme, 2014, 2013] 2 + 1

Q.3. Define positive geotropism and negative geotropism. Give one example of each.

[Board Term I Set-NS9SX1D, 2016]

Ans. The movement of plant part in response to gravity is called geotropic movement and the phenomenon involved is called geotropism.

When the tip of the stem grows away from the earth's gravitational forces, it is known as negative geotropism and when the root tips grow towards gravity, it is known as positive geotropism.

Stem shows negative geotropism

Roots show positive geotropism.

3



Q.4. Design an experiment to demonstrate hydrotropism.

[Board Term I Set-0QKPLGV, 2016]

Ans. Hydrotropism can be demonstrated with any germinating seedlings, which are allowed to grow on ground. The soil around the roots is separated by a polythene partition. The left side is kept moist and the right side dry.

The radicle at first grows in a downward direction and after sometime the roots bend towards the moist soil. This is due to movement of the germinating roots to water.

[CBSE Marking Scheme, 2016] 3

Q.5. Give one example, of following plants :

[Board Term I, Set-A852IL, 2015]

- (a) Which is (i) positively phototropic and (ii) negatively geotropic.
- (b) Which is positively hydrotropic as well as positively geotropic ?
- (c) Which synthesises auxin ?

Ans.

- (a) (i) Positively phototropic — Shoot
- (ii) Negatively geotropic — Shoot
- (b) root
- (c) Shoot tip

1+1+1

[CBSE Marking Scheme, 2015]

Q.6. Name and state briefly one function each of any three phyto-hormones.

[Board Term I, Set-IZHNPNNO, 2016]

- Ans. (i) Abscissic acid :** inhibits growth, wilting of leaves
(ii) Gibberellins : helps the growth of stem
(iii) Cytokinins : promotes cell division

[CBSE Marking Scheme, 2016] 3

Detailed Answer :

- (i) **Auxin :** Promotes cell elongation and division, also helps in the formation of roots and seedless fruits.

- (ii) **Gibberellins** : These are the hormones that help in the growth of the stem and flower.
- (iii) **Cytokinins** : It promote cell division and delay ageing in leaves. It reduces apical dominance and also stimulates the leaf expansion.
- (iv) **Abscissic acid** : It is a growth-inhibitor hormone that reverses the growth-promoting effects of auxin and gibberellins. It causes dormancy of seeds, wilting of leaves, closing of stomata and loss of proteins and chlorophyll.
- (v) **Ethylene** : It promotes transverse growth, also promotes senescence and abscission of leaves. It acts as an essential hormone for the ripening of fruits.

(Any three)

Q. 7. How do auxins promotes the growth of a tendril around a support ? Describe in brief.

[Board Term-I, 42 Set (42), 2012]

Ans. Auxins produced in the shoot tip move downwards in the plant. These auxins cause cell elongation in the growing tissues. In the tendrils, auxins move away from the point of contact with the supporting object. More growth occurs on the side away from the support. As a result of unequal growth on the two sides, the tendril coils around the support.

[CBSE Marking Scheme, 2012] 1 + 1 + 1

Q. 8. Name the plant hormone that promotes growth. How do these hormones bring about phototropism in the shoots of a plant ?

[Board Term-I, 57 Set (57), 2012]

Ans. Plant hormone that promotes growth is Auxin. 1
 Light falls on one side of the plant, auxins diffuse towards shady side of the shoot. 1
 Auxin stimulates the cells to grow longer on shady side. $\frac{1}{2}$
 Plant appears to bend towards light. $\frac{1}{2}$

[CBSE Marking Scheme, 2012]

Q. 9. (i) State the function of plant hormones. Name a plant hormone which is essential for cell division.

(ii) Name the hormone which is involved in phototropism. Explain its role.

[Board Term-I Set (18), 2012]

Ans. (i) Plant hormones are the chemicals secreted by the plants which helps to co-ordinate growth, development and responses to the environment: 1

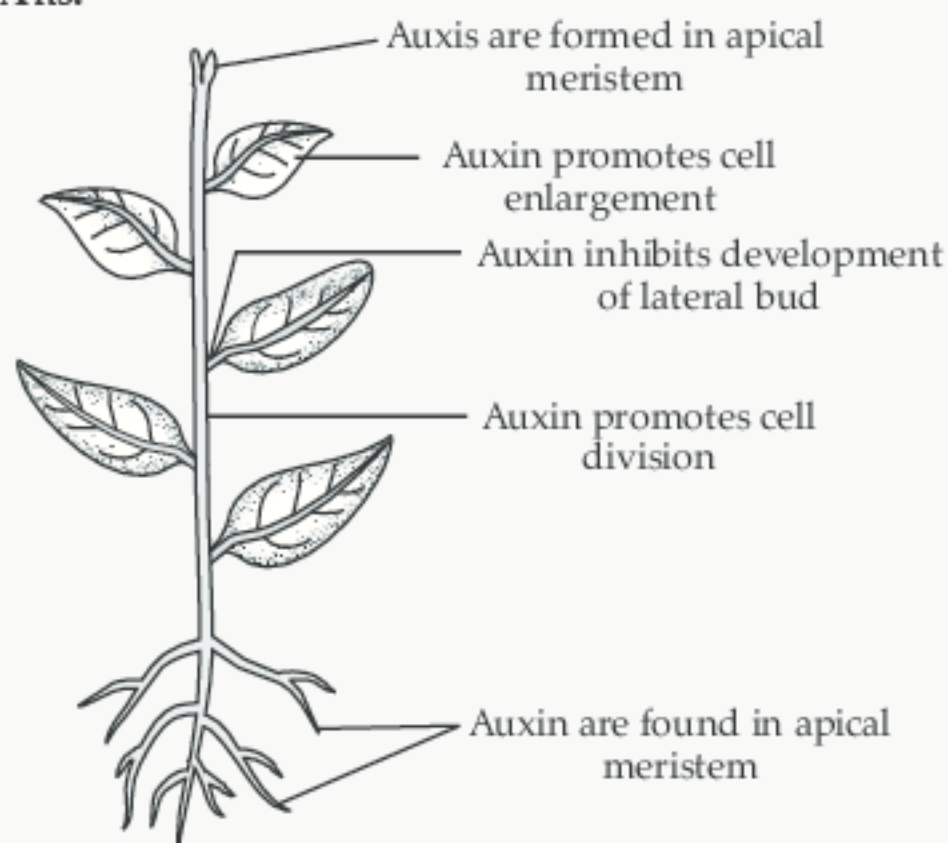
Cytokinin $\frac{1}{2}$ (ii) Auxin $\frac{1}{2}$

When growing plant detects light, auxin is synthesized at the shoot tip and helps the cell to grow longer. When light comes from other side of the plant, auxin diffuses to shady side of the shoot.

[CBSE Marking Scheme, 2012] 1

Q. 10. Illustrate with the help of a diagram, the effect of auxins in different parts of a plant.

[Board Term-I, Set-IN14KGB, 2014]

Ans.

[CBSE Marking Scheme, 2014] 3

Q. 11. How do auxins help in bending of stem towards light ? Explain. [Board Term-I, Set (41), 2012]

Ans. When growing plants detect light, a hormone called Auxin, synthesized at the shoot tip helps the cells to grow longer. When light is coming from one side of the plant, Auxin diffuses towards the shady side of the shoot. This concentration of Auxin stimulates the cells to grow longer on the side of the shoot which is away from light. Thus, plant appears to bend towards light. 3

[CBSE Marking Scheme, 2012]

Q. 12. Florist sprinkled a plant hormone to prevent wilting of leaves. Name the hormone he must have used. Give two more examples of plant hormones and also write their functions.

[Board Term I, 51 Set (51), 2012]

Ans. Abscissic acid prevents wilting of leaves. 1

Other plant hormones :

Cytokinin which promotes cell division 1

Gibberellins which help in the growth of stem. 1

[CBSE Marking Scheme, 2012]

Q. 13. List in tabular form three differences in the movement of leaves of a Touch-me-not plant (the plant of Mimosa family) when touched and movement of a tendril towards a support.

[Board Term I, Set 47, 2012]

Ans.

S. No.	Mimosa Leaves	Tendril
(i)	Growth independent response.	Growth dependent response.
(ii)	It is a fast process.	It is a slow process.
(iii)	It is non-directional	It is directional

[CBSE Marking Scheme, 2012] 1 + 1 + 1

Long Answer Type Questions

(5 marks each)

- Q.1. What are plant hormones ? Give four different types of plant hormones and state their functions briefly. [DEE 2017]

[Board Term I Set-L7ZSVLGH, 2016]

Ans. The chemical compounds released by stimulated cells for control and coordination in plants are called plant hormones or phytohormones.

Auxin - controls growth

Gibberellins - helps growth in stem

Cytokinin - promotes cell division

Abscissic acid - Inhibits growth, wilting of leaves 5

[CBSE Marking Scheme 2016]

- Q.2. (a) Write the names and one function of each of any three growth hormones in plants.

(b) In the absence of muscle cells, how do plant cells show movement ?

[Board Term-I, Set-5X7289R, 2014]

Ans. (a) Three growth hormones in plants are—

(i) **Auxin** : It is synthesised in the young tip of roots and shoots. It promotes elongation and division of cell and root formation.

(ii) **Gibberellins** : They help in the growth of the stem.

(iii) **Cytokinins** : They promote cell division and delay leaf ageing.

(b) The ability of a plant to detect change and respond to that change is termed as the sensitivity of the plant. Yet plants have no nervous system and no muscle tissue, they use electrical and chemical

means to convey the information from one cell to another cell. The leaves of the sensitive plant (*Mimosa Pudica*) folds up in response to touch. These leaf movements are independent of growth whereas, the directional movement of the shoot of a germinating seedling breaking through the soil is growth dependent. 3 + 2

- Q.3. A natural occurring class of plant hormones cytokinins has been found to help increase cotton yields during drought conditions. It has been observed that young cotton seedlings have small root system, making it difficult for them to reach available soil water. Cytokinins assists the young plants in water stress defences, promoting the plant to quickly build a bigger root system to access deep soil moisture. To be effective this phytohormone should be applied at an early stage of development.

(i) What are phytohormones ?

(ii) Which hormone is synthesized at the shoot-tip of plant body ?

(iii) "Plant hormones help to co-ordinate growth." Justify the statement by giving three examples.

Ans. (i) Plant hormones are known as phytohormones. 1

(ii) Auxin is synthesized at the shoot-tip of plant body. 1

(iii) Examples :

(a) Auxins play a role in the development of seedless fruits.

(b) Gibberellin stimulates stem elongation.

(c) Ethylene promotes ripening of fruits. 3

TOPIC-2

Control and Co-ordination in Animals

Very Short Answer Type Questions

(1 mark each)

- Q.1. Name two tissues which provide control and co-ordination in animals. [DDE - 2014]

Ans. Nervous tissues and muscular tissues $\frac{1}{2} + \frac{1}{2}$

- Q.2. Name the two components of central nervous systems in humans.

[Board Term-I, Set-37, 2012]

Ans. Brain and spinal cord. $\frac{1}{2} + \frac{1}{2}$

- Q.3. Name the two components of peripheral nervous system.

[Board Term I Set-1Z2SVLH, 2016]

Ans. Cranial nerves arising from the brain and the spinal nerves arising from the spinal cord.

[CBSE Marking Scheme 2016] 1

- Q.4. Name the largest cell present in the human body. [Board Term-I, Set-56, 2011]

Ans. Neuron. 1

- Q.5. Mention the part of the brain which controls the involuntary actions like blood pressure, salivation etc.

[Board Term I Set OXKPLGV, 2016]

Ans. Medulla in the hind brain

[CBSE Marking Scheme 2016] 1

- Q.6. Name the part of the brain which controls posture and balance of the body.

[Board Term-I, Set-18, 2012]

Ans. Cerebellum. 1

Q. 7. Name the part of the neuron where information is acquired. [Board Term-I, Set-48, 2012]

Ans. Dendrite. 1

Q. 8. Name the part of neuron through which the information travels as an electric impulse.

[Board Term-I, Set-49, 2012]

Ans. Axon. 1

Q. 9. What is synapse? [Board Term-I, Set 41, 2012]

Ans. The junction between neurons is called synapse. 1

Q. 10. What happens at Synapse between two neurons? [DDE – 2017]

Ans. At synapse the electrical signals are converted into chemicals that can easily cross over the gap and pass on to the next neurons where it again converted into electrical signals. In this way, the impulse is transmitted from one neuron to another 1

Q. 11. Name the sensory receptors found in the nose and on the tongue. [Board Term-I, Set-15, 2012]

Ans. Olfactory and Gustatory receptors. $\frac{1}{2} + \frac{1}{2}$

Q. 12. Mention the part of the body where gustatory and olfactory receptors are located.

[Board Term-I, Set-36, 2012]

Ans. Tongue and Nose. $\frac{1}{2} + \frac{1}{2}$

Q. 13. Define feedback mechanism of hormones.

[Board Term-I, Set-A85V216L, 2015]

Ans. The mechanism that controls the flow of hormones is called feedback mechanism of hormones.

Q. 14. Name the mechanism by which amount of hormone in the blood is regulated.

[Board Term-I, Set-50, 2012]

Ans. Feedback mechanism. 1

Q. 15. Which gland is known as master gland?

[DDE 2017]

Ans. Pituitary Gland.

Q. 16. Name the hormone that regulates blood sugar level?

[DDE 2017]

Ans. Insulin.

Q. 17. Name the hormones in humans which regulates carbohydrate, protein and fat metabolism in the body. Mention the site where it is synthesized.

[Board Term I Set-1Z2SVLH, 2016]

Ans. The hormone is thyroxine.

The site where it is synthesized is thyroid gland.

[CBSE Marking Scheme 2016] 1

Q. 18. Name the diseases by which a person is likely to suffer due to the deficiency of:

[Board Term-I, Set-53, 2011]

(i) Iodine

(ii) Insulin.

Ans. (i) Goitre

(ii) Diabetes. $\frac{1}{2} + \frac{1}{2}$

Short Answer Type Questions-I

(2 marks each)

Q. 1. Define neuron. Name the parts of neuron where:

(i) Information is acquired.

(ii) Impulse must be converted into chemical signal for onward transmission.

[Board Term-I Set-JYNE6XG, 2015]

Ans. The units which makes up the nervous system are called neurons.

(i) End of dendrite tip of nerve cell.

(ii) Dendrite → cell body → axon to its ends. 1 + 1

Q. 2. Define—sensory neuron, interneuron and motor neuron. [DDE 2017]

Ans. The sensory Neuron carries impulses from sense Organs to Central Nervous System, the Interneuron make a decision based upon stimuli, and the motor neuron carries impulse from the CNS to the muscle or gland to respond. 1+1

Q. 3. What is the need for a system of Control and co-ordination in an organization? [DDE 2017]

Ans. The maintenance of the body functions in response to changes in the body by working together of various integrated body system is known as co-ordination. All the movements that occur in response to stimuli are carefully co-ordinated and controlled. In animals, the control and co-ordination

movement are provided by nervous and muscular systems. 2

Q. 4. (i) What is a reflex action?

(ii) Give example of involuntary action.

Ans. (i) Reflex action is defined as an unconscious and involuntary response of effectors to a stimulus. 1

(ii) **Involuntary action:** Beating of heart, salivation in the mouth on chewing of tasty food. 1

Q. 5. What are receptors? Name the receptors that are located in (i) tongue, (ii) nose. [DDE-2015]

Ans. Sense organs are called receptors

(i) Tongue → Gustatory receptors

(ii) Nose → Olfactory receptors 1 + $\frac{1}{2}$ + $\frac{1}{2}$

Q. 6. State the role of brain in reflex action. [Board Term I, Set-C1, 2010]

Ans. The sensory area of brain receives information, interprets it and makes a rapid decision → message transmitted to motor area → motor neuron sends information to receptor organ → controlled by medulla in the hind brain. 1 + 1

Q. 7. Name the parts of the brain that perform the following functions:

(i) Maintaining the posture and balance of the body.

(ii) Regulating blood pressure.

(iii) Sensation of hunger or feeling full.

(iv) Seeing [Board Term-I Set-2ZGOVVV, 2015]

Ans.

- (i) Hind brain
- (ii) Hind brain
- (iii) Fore brain
- (iv) Fore brain. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

U Q. 8. Write the main functions of the following :

- (i) Sensory neuron
- (ii) Cranium
- (iii) Vertebral column
- (iv) Motor neuron.

[Board Term-I Set-WH1SGOB, 2014]

- Ans. (i) To pass information from receptors to brain.
 (ii) Bony box which protects our brain.
 (iii) Bony structure that protects the spinal cord.
 (iv) To transmit information from brain or spinal cord to effector organ. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

[CBSE Marking Scheme, 2012]

U Q. 9. Write the name and functions of any two parts of the hind-brain.

Ans. There are three components of hind-brain—pons, cerebellum, medulla oblongata.

Functions of Pons : Relay centre, pneumotaxic area of respiratory centre. 1

Functions of Cerebellum : Maintains equilibrium and co-ordinates muscular activities. 1

U Q. 10. On touching a hot plate, you suddenly withdraw your hand. Which category of neurons became active first and which one next ?

Ans. On touching a hot plate, first the sensory neurons gets activated, which take the information to the brain or the spinal cord. Next, the motor neurons become active and bring the impulses from the brain to the muscles. On receiving these impulses, the muscles contract, and the hand is immediately removed from the hot plate. 2

A Q. 11. Taking the example of heart beat, justify the antagonistic action of the sympathetic and the parasympathetic nerves.

Ans. Sympathetic system increases contraction and rhythm and parasympathetic system decreases contraction and rhythm with respect to heart beat. 2

U Q. 12. What is the cause of diabetes ? How it can be controlled ? [DDE 2017]

Ans. The pancreas, an organ that lies near the stomach, makes a hormone called insulin to help glucose get into the cells of our bodies. When you have diabetes, your body either doesn't make enough insulin or can't use its own insulin as it should. This causes sugars to build up in the blood. It can be controlled by taking insulin. 1+1

U Q. 13. How does our body maintain blood sugar level ? [Board Term-I, Set-C1, 2010]

Ans. Timing and amount of hormone released are regulated by feed back mechanisms. If sugar level in blood rises, cells of pancreas detect and secrete more

insulin which leads to the fall off sugar level. 2

A Q. 14. The hormones of pancreas are antagonistic in nature. How ?

Ans. The hormones of pancreas function in opposite manner. Pancreas releases two hormones, i.e.

- (i) Insulin
- (ii) Glucagon

Insulin lowers the blood glucose level, while glucagon increases the blood glucose level. Hence, they are antagonistic. 1 + 1

U Q. 15. Name the glands present in the wall of the stomach that release secretions for digestion of food. Write the three components of secretion that are released by these glands.

[Board Term-I, Set-A85V2IL, 2015]

Ans. Gastric gland

Three components of secretion of gastric gland—

- (i) Hydrochloric acid
- (ii) Mucus
- (iii) Pepsin

[CBSE Marking Scheme-2015] 2

U Q. 16. Name the hormone responsible for the regulation of (i) metabolism of carbohydrates, fats and proteins, (ii) balance of calcium and phosphate, (iii) blood pressure, (iv) water and electrolyte balance.

Ans. (i) Thyroxine

(ii) Parathormone

(iii) Adrenaline

(iv) Vasopressin or ADH (Antidiuretic hormone)

$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

U Q. 17. Name the hormones responsible for :

- (i) development of moustache and beard in males.
- (ii) controlling the uterus changes in menstrual cycle.
- (iii) increasing blood glucose level.
- (iv) maintaining water and electrolyte balance.

Ans. (i) Testosterone

(ii) Progesterone

(iii) Glucagon

(iv) Vasopressin

R Q. 18. Answer the following :

- (a) Which hormone is responsible for the changes noticed in females at puberty ?
- (b) Dwarfism results due to deficiency of which hormone ?
- (c) Blood sugar level rises due to deficiency of which hormone ?
- (d) Iodine is necessary for the synthesis of which hormone ? [NCERT Exemplar 2017]

Ans. (a) Luteinizing

(b) Thyroxine

(c) Insulin

(d) Thyroxine and Follicle Stimulating hormone

$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

A Q. 19. Why is it advisable to use iodised salt ?

[DDE 2017]

Ans. Iodine is necessary for the making of thyroxine hormone by thyroid gland, therefore, a deficiency of iodine in the diet can cause a deficiency of

thyroxine hormone in the body. The deficiency of iodine in the diet of a person produces less thyroxine hormone and cause a disease called Goitre. 2

Q. 20. Answer the following :

- (a) Name the endocrine gland associated with brain ?
 (b) Which gland secretes digestive enzymes as well as hormones ?

(c) Name the endocrine gland associated with kidneys ?

(d) Which endocrine gland is present in males but not in females ? [NCERT Exemplar 2017]

Ans. (a) Pituitary gland (b) Pancreas
 (c) Adrenal (d) Testes. $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$

Short Answer Type Questions-II

(3 marks each)

Q. 1. Draw a neat diagram of human brain and label on it the following parts :

- (i) Mid brain
 (ii) Pituitary gland
 (iii) Cerebellum

(iv) Cerebrum [DDE 2017]

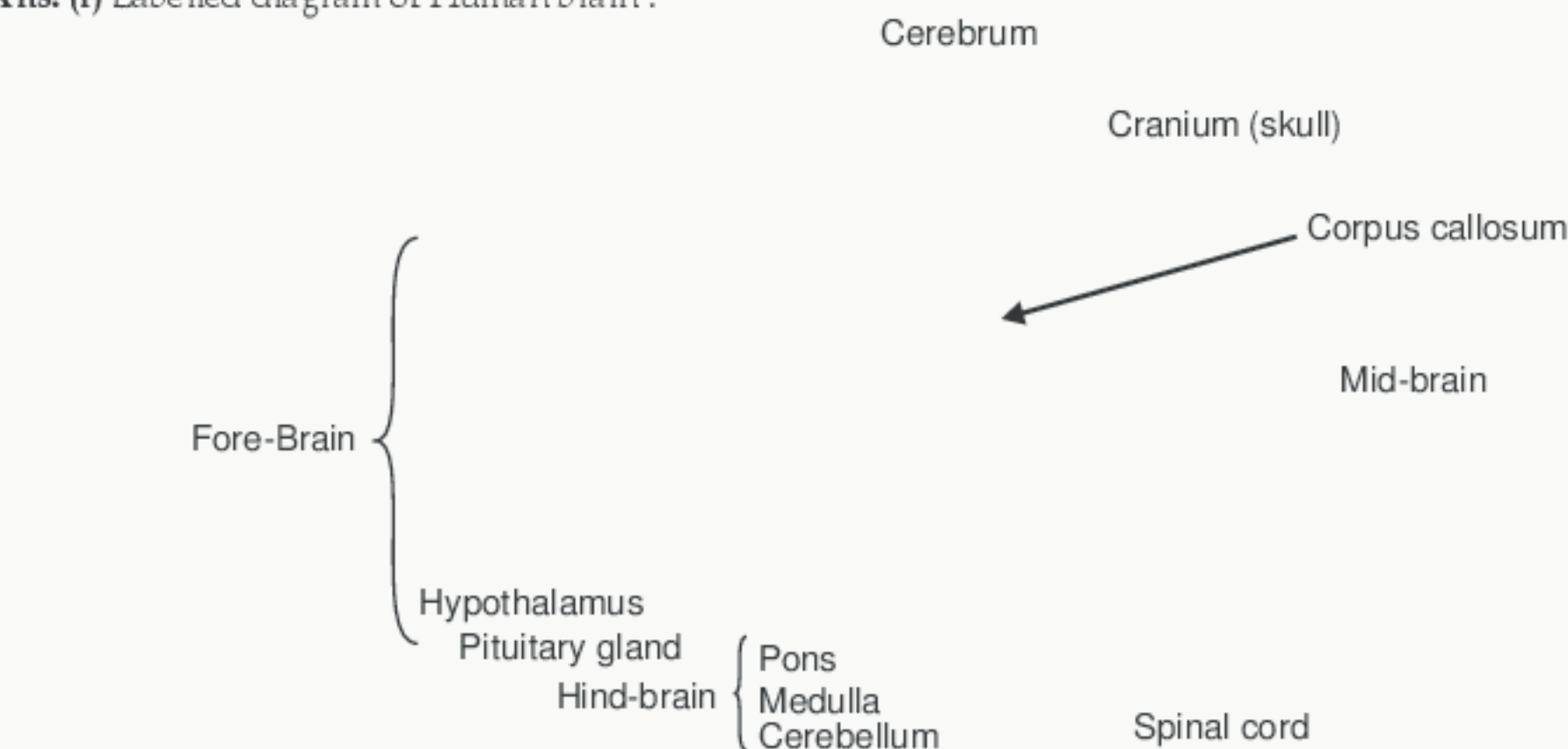
[KVS 29017] [Board Term-I Set A85V2IL, 2015]

OR

- (i) Draw a well-labelled diagram of human brain.
 (ii) Which is the main thinking part of brain ?

[NCERT Exemplar 2017]
 [Board Term-I, Set-3R6WRQL, 2013]

Ans. (i) Labelled diagram of Human brain :



(ii) Fore-brain.

[CBSE Marking Scheme, 2013] 2 + 1

Q. 2. Define reflex action. Give one example. Show with the help of a flow diagram the path of the reflex action. [NCERT Exemplar 2017]
 [Board Term I Set-40, 2012]

Ans. Reflex action is a sudden action in response to something in the environment 1
 e.g., pulling out hand from the flame if accidentally touched. 1

The path of the reflex action is as follows :

Receptors → sensory neuron → spinal cord → motor neuron → effector 1

[CBSE Marking Scheme, 2012]

Q. 3. Write three main functions of the nervous system.

[Board Term-I Set-5X7289R, 2014]

Ans. (i) Collects information from the surroundings.

(ii) Controls and co-ordinates the movement of muscles.

(iii) Helps to recognise smell, taste, vision, hearing etc. with the help of sense organs. 1 + 1 + 1

Q. 4. Explain the feed back mechanism to regulate the action of the hormones with the help of one suitable example.

[Board Term-I, Set-OQLPLGV, 2016]

Ans. Hormones should be secreted in precise quantities.

The timing and amount of hormone released are regulated by feedback mechanism. For example, if the sugar level in blood rises, they are detected by the cells of the pancreas which respond by producing more insulin. As the blood sugar level, falls, insulin secretion is reduced.

[CBSE Marking Scheme 2016] 3

Q.5. Which hormone is known as emergency hormone in our body ? How it helps in coping during emergency. [DDE 2017]

Sol. Adrenaline is a hormone made by the adrenal medulla. It plays a vital role in helping our body deal with emergencies. Adrenaline is also known as epinephrine.

It initiates quick action which makes the individual to think and respond quickly to the stress. The hormone increases metabolic rate. There occurs dilation of blood vessels going to heart and brain. The blood vessels reaching skin and kidneys constrict in order to provide more blood to the heart and the brain. It also increase fat metabolism thereby synthesising more energy. 1+2

Q.6. (a) Identify the glands that secrete :

(i) insulin (ii) thyroxin.

(b) Explain with an example how the timing and amount of hormone secreted are regulated in the human body. [Board Term-I, Set-18, 2012]

Ans. (a) (i) Insulin is secreted by pancreas. ½

(ii) Thyroxin is secreted by thyroid gland. ½

(b) The timing and amount of hormone released are regulated by feedback mechanism. 1

Example : If the sugar level in blood rise, they are detected by the cells (Islets of Langerhans) of pancreas which respond by producing more insulin. 1

Q.7. Name a hormone secreted by :

(i) Pancreas (ii) Pituitary (iii) Thyroid.

State one function of each of the hormones.

[Board Term-I Set-39, 2012]

Ans. (i) Pancreas secretes hormone insulin. It helps in regulating the blood sugar level.

(ii) Pituitary secretes growth hormone. It regulates growth and development of the body.

(iii) Thyroid secretes thyroxine hormone. It regulates carbohydrates, protein and fat metabolism in the body so as to provide the best balance for growth.

[CBSE Marking Scheme, 2012] 1 + 1 + 1

Q.8. (a) An old man is advised by his doctor to take less sugar in his diet. Name the disease from which the man is suffering. Mention the hormone due to imbalance of which he is suffering from this disease. Which endocrine gland secretes this hormone ?

(b) Name the endocrine gland which secretes growth hormone. What will be the effect of the following on a person :

(i) Deficiency of growth hormone.

(ii) Excess secretion of growth hormone.

[Board Term-I Set-WDCXXOV, 2016]

Ans. (a) The man is suffering from Diabetes mellitus.

Hormone is Insulin.

Endocrine gland that secretes insulin is pancreas. 1½

(b) The endocrine gland which secretes growth hormone is pituitary gland.

(i) Deficiency of growth hormone causes dwarfism.

(ii) Excess secretion of growth hormone causes gigantism. 1½

Q.9. Name the hormone which regulates carbohydrate, protein and fat metabolism in our body. Which gland secretes this hormone ? Why is it important for us to have iodised salt in our diet ? [Board Term-I Set L7ZSVLH, 2016]

Ans. The hormone which regulates carbohydrates, protein and fat metabolism in our body is thyroxine.

Thyroxine hormone is secreted by thyroid gland.

Iodised salt in diet is important because it contains iodine, which is essential for the synthesis of thyroxine hormone by the thyroid gland. In case, iodine is deficient in our diet, there is a possibility of suffering from goitre. 1 + 1 + 1

Q.10. Mention three characteristics features of hormonal secretions in human beings.

[Board Term-I Set-5X7289R, 2014]

Ans. (i) Hormones are also known as chemical messengers as they act at a place different from the site of their manufacture.

(ii) Their hyper and hyposecretion may cause disorder.

(iii) They help in control and co-ordination of the activities of living organism. 1 + 1 + 1

Q.11. (i) Name the hormone secreted by thyroid gland and state its function.

(ii) Why is it important for us to have iodised salt in our diet ?

(iii) Name the disease caused due to deficiency of iodine and mention its main symptom.

[Board Term-I Set-40, 2012]

Ans. (i) The hormone secreted by thyroid gland is thyroxin. It regulates carbohydrate, protein and fat metabolism in the body so as to provide the best balance for growth. 1

(ii) Iodine is necessary for the thyroid gland to make thyroxin hormone. 1

(iii) The disease caused due to deficiency of iodine is Goitre. Its main symptom is swollen neck. 1

[CBSE Marking Scheme, 2012]

Q.12. Explain how muscles change their shape ?

[Board Term-I Set-2ZGOVVV, 2015] 3

Ans. The shape of muscles depends on ability to adapt to external forces. When placed under high demand, they generate great strength and power and maintain durability. Muscle is a soft tissue and their cells contain protein, filaments of actin and myosin that slide past one another, producing a contraction that changes both the length and shape of the cell. 3

Q.13. (a) How is brain protected from injury and shock ?

(b) Name two main parts of hind brain and state the function of each. [Board Term-I Set-37, 2012]

Ans. (a) The brain is situated in the cavity of a bony box called skull. The brain is contained in a fluid-filled balloon which provides further shock absorption. 1

(b) The two main parts of hind-brain are :

(i) Cerebellum : It is responsible for precision of voluntary actions and maintaining the posture and balance of the body. 1

(ii) Medulla oblongata : All involuntary actions, such as blood pressure, salivation, vomiting etc., are controlled by the medulla in the hind brain. 1

[CBSE Marking Scheme, 2012]

Q. 14. Where are different receptors present in our body? What are their functions? (DDE 2017)

Ans. (i) Phonoreceptors are found in Ear. Their function is to hear and balance of the body.

(ii) Photoreceptors are found in Eyes. Their function is to see.

(iii) Olfactory receptors are found in Nose. Their function is smell detection.

(iv) Thermoreceptors are found in Skin. Function is Heat, Cold or Touch.

(v) Gustatory receptors are found in Tongue. Function is Taste detection. (any three) 1+1+1

Q. 15. (a) Draw the structure of neuron and label cell body and axon.

(b) Name the part of neuron :

(i) where the information is required.

(ii) through which information travels as an electrical impulse. [(NCERT) Board Term-I Set-37, 2012]

Q. 17. (i) Write the role of motor areas in brain.

(ii) A nerve input signal travelled only upto the spinal cord and gave output signal for a response. What type of action will the body show—voluntary or involuntary?

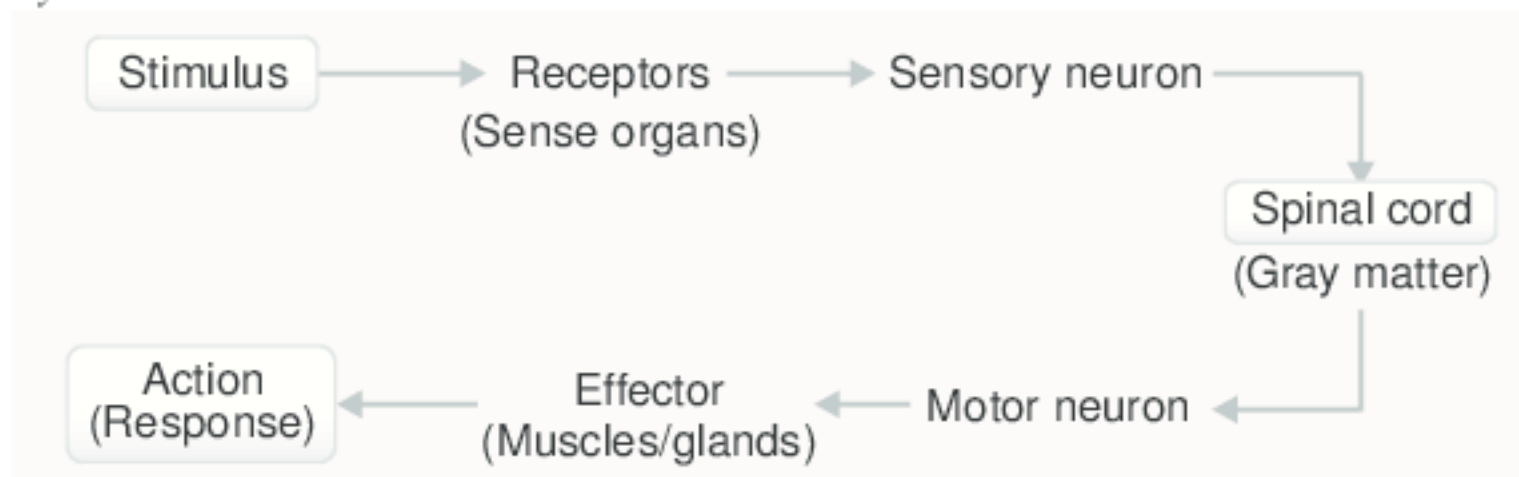
(iii) Draw a nerve pathway for the above action.

[DDE-2014]

Ans. (i) Motor areas in brain send impulses to muscles and glands. It control the movement of voluntary muscles.

(ii) Involuntary actions.

(iii)



1 + 1/2 + 1 1/2

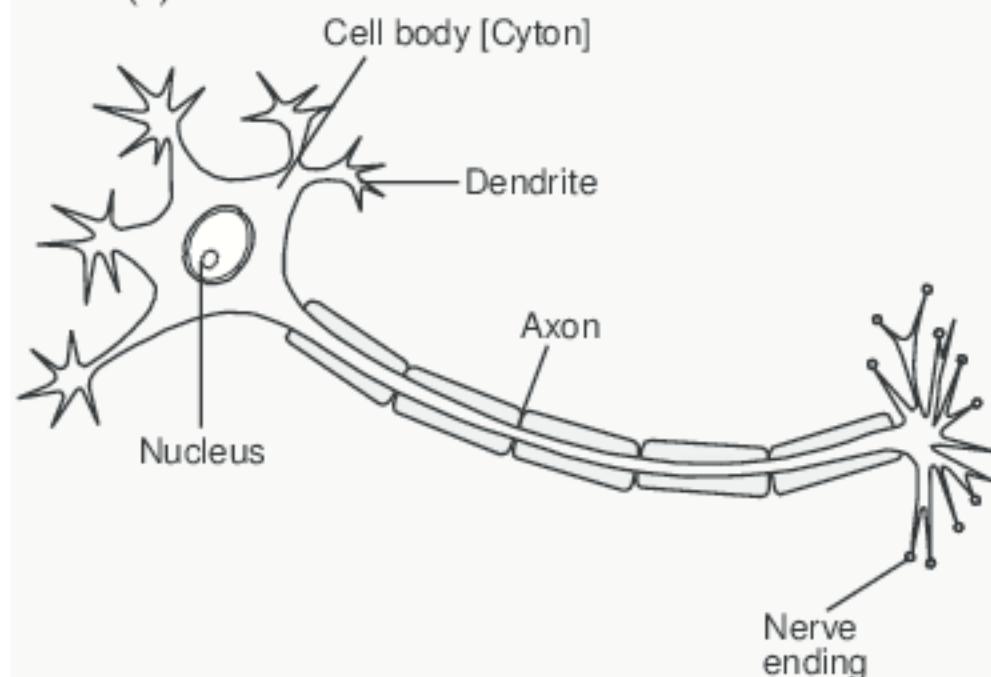
Q. 18. In the given diagram of reflex arc :

(i) Name the parts labelled A, B, C, D and E.

(ii) Write the functions of B and E

[Board Term-I Set-43, 2012]

Ans. (a)



2

(b) (i) The information is acquired at the end of the dendrite tip of a nerve cell. 1/2

(ii) The information travels as an electrical impulse from the dendrite to the cell body and then along the axon to its end. 1/2

[CBSE Marking Scheme, 2012]

Q. 16. (a) Name the part of brain which controls :

(i) voluntary action **(ii)** involuntary action.

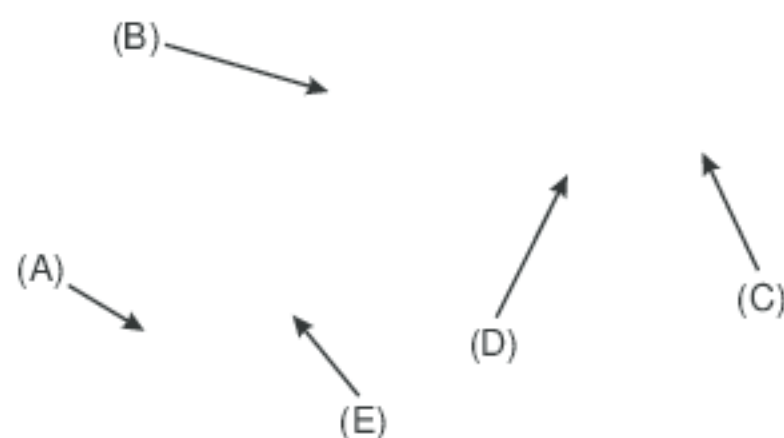
(b) What is the significance of the peripheral nervous system? Name the components of this nervous system and distinguish between the origin of the two. [Board Term-I Set-15, 2012]

Ans. (a) (i) Voluntary action – Cerebellum, **(ii)** Involuntary action – Medulla. 1/2 + 1/2

(b) The communication between the central nervous system and the other parts of the body is facilitated by the peripheral nervous system. Cranial nerves and spinal nerves are its main components. 1

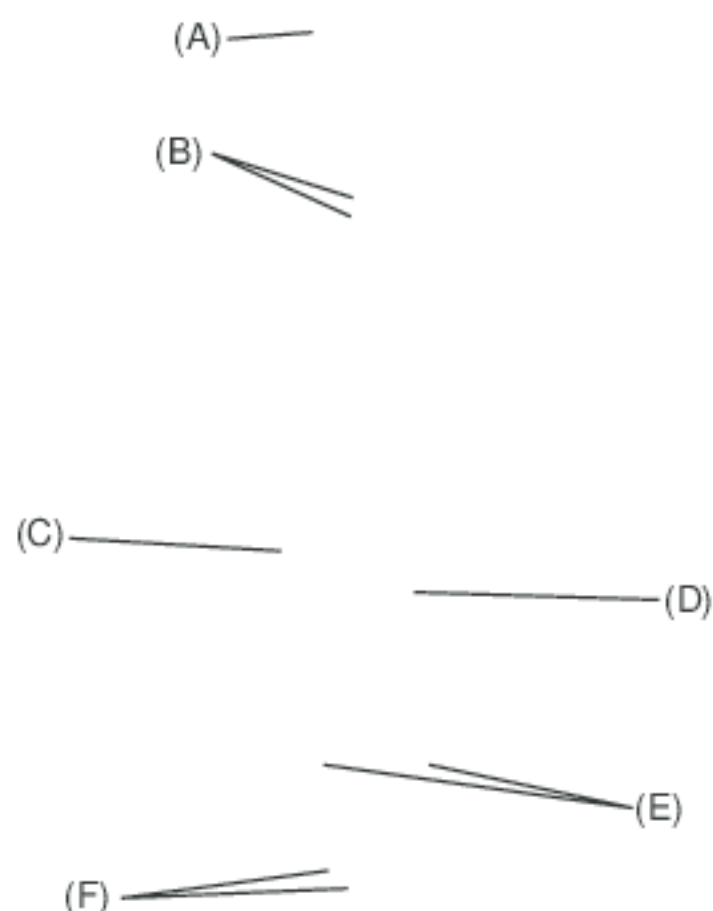
Cranial nerves arise from the brain; spinal nerves arise from the spinal cord. 1

[CBSE Marking Scheme, 2012]



- Ans. (i)** A — receptor
 B — sensory neuron / nerve $\frac{1}{2}$
 C — relay neuron / interneuron $\frac{1}{2}$
 D — motor neuron / nerve $\frac{1}{2}$
 E — effector $\frac{1}{2}$
(ii) B — Carries impulse from receptor to spinal cord $\frac{1}{2}$
 E — Responds to stimulus $\frac{1}{2}$
[CBSE Marking Scheme, 2012]

- [A] Q. 19. (i)** Identify the endocrine glands A, B, C, D, E and F in the given diagram.
(ii) List the functions of parts D and F.
[Board Term-I, Set-44, 2012]



- Ans. (i)** A — Pituitary
 B — Thyroid
 C — Adrenal
 D — Pancreas
 E — Ovary
 F — Testis. 2
(ii) Pancreas : Secrete insulin which controls amount of sugar in blood. $\frac{1}{2}$
Testis : Secrete testosterone which controls sperm production/secondary sexual character. $\frac{1}{2}$
[CBSE Marking Scheme, 2012]

- [U] Q. 20. Mention one role of each of the following :**

(i) Cerebellum

(ii) Fore-brain

(iii) Medulla.

[Board Term-I Set-45, 2012]

- Ans. (i) Cerebellum :** It is responsible for precision of voluntary actions and maintaining the posture and balance of the body. 1
(ii) Fore-brain : Thinking 1
(iii) Medulla : Controls involuntary actions like blood pressure, salivation and vomiting. 1

[CBSE Marking Scheme, 2012]

- [U] Q. 21. Name the main thinking part of the human brain. List four major functions (other than thinking) of this part.**

[Board Term-I Set-52, 2012]

- Ans.** Fore brain is the main thinking part of human brain. 1

Other Functions :

- (i) Hearing, smell and sight $\frac{1}{2}$
 (ii) Storing information $\frac{1}{2}$
 (iii) Movement of voluntary muscles $\frac{1}{2}$
 (iv) Sensation of feeling hunger or satiety. $\frac{1}{2}$

[CBSE Marking Scheme, 2012]

- [U] Q. 22. Name the hormone that is secreted by our body to deal with scary situations. List any two responses shown by our body when this hormone is secreted into the blood.**

[Board Term-I Set-45, 2012]

- Ans.** Adrenaline. 1

Two responses :

- (i) It acts on heart due to which heart beats faster, resulting in the supply of more oxygen to our muscles.
 (ii) The breathing rate increases because of the contractions of the diaphragm and the rib muscles.
 (iii) The blood to the digestive system and skin is reduced due to the contraction of muscles around small arteries in these organs. **(Any two can be given)**

[CBSE Marking Scheme, 2012] 2

- [A] Q. 23. For a receiving tennis player, what is the path from the stimulus to the response ? [DDE-2014]**

- Ans.** Eye receive stimulus, i.e., vision of ball. Receptor receives stimulus and stimulates nerve endings. Impulses are produced. Impulses travel along receptor neuron to the spinal cord. In the spinal cord, they are transmitted via synapse to relay neurons. Through another synapse impulses are transmitted from relay to effector neuron. Effector neuron receive decision from brain. Effector neuron moves to effector i.e., arm. The bicep/tricep muscles arrange themselves for the response.

- [U] Q. 24. Explain with the help of an example how the timing and amount of hormone released are regulated ? [Board Term-I, Set-3R6WRQL, 2013]**

Ans. It is regulated by feedback mechanisms.

Example : Rise in sugar level in blood–insulin secreted by pancreas.

Fall in blood sugar level–insulin secretion is reduced. [CBSE Marking Scheme, 2013] 1 + 1 + 1

Q.25. How do we respond when adrenal gland secretes its hormone ? [Board Term-I, Set-48, 2012]

Ans. (i) Adrenaline is carried to target organs/heart. $\frac{1}{2}$

(ii) Heart beats faster, supply of more oxygen to muscles. $\frac{1}{2}$

(iii) Blood supply to digestive system and skin reduced. $\frac{1}{2}$

(iv) Breathing rate increases. $\frac{1}{2}$

(v) Blood supply diverted to skeletal muscles. $\frac{1}{2}$

(vi) Animal body becomes ready to deal with the situation. [CBSE Marking Scheme, 2012] $\frac{1}{2}$

Q.26. List in tabular form three difference between nervous control and chemical control.

[Board Term-I, Set-49, 2012]

Ans.

S. No.	Nervous Control	Chemical Control
(i)	Fast process.	Slow process.
(ii)	Less persistent/ neurons take time to reset.	More persistent.
(iii)	Reach to connected cells only.	Reach all the cells of the body.

[CBSE Marking Scheme, 2012] 3

Q.27. 'Brain and Spinal cord are two vital organs of our body'. How is our body designed to protect them ? [Board Term-I, Set-51, 2012]

Ans. Brain and spinal cord are the parts of central nervous system. Brain is located inside a bony box, named as cranium and a fluid is present in this balloon, known as cerebrospinal fluid which is a shock absorber.

Spinal cord is placed in a vertebral column and back bone protects it. 3

[CBSE Marking Scheme, 2012]

Long Answer Type Questions

(5 marks each)

Q.1. (i) Define receptor and state their location in our body. Mention any two receptors present in our forebrain and their functions

(ii) How do nerve impulses travel in our body ?

[Board Term-I Set 1ZHNPNO, 2016]

Ans. (i) Specialised tips of some nerve cells which receive information from the surroundings.

Location - Sense organs

Gustatory receptor - detect taste

Olfactory receptor - detect smell

(ii) The information acquired at the end of the dendritic tip of a nerve cell, sets off a chemical reaction that creates an electrical impulse, which travels to the cell body, then along the axon to its end, releases some chemicals, across the synapses.

[CBSE Marking Scheme 2016] 1 + 1 + 1 + 2

Q.2. (a) Draw the structure of a neuron and label the following on it :

(i) Dendrite

(ii) Cell body

(iii) Nucleus

(iv) Axon

(b) Name the parts of a neuron :

(i) where information is acquired

(ii) through which information travels as an electrical impulse

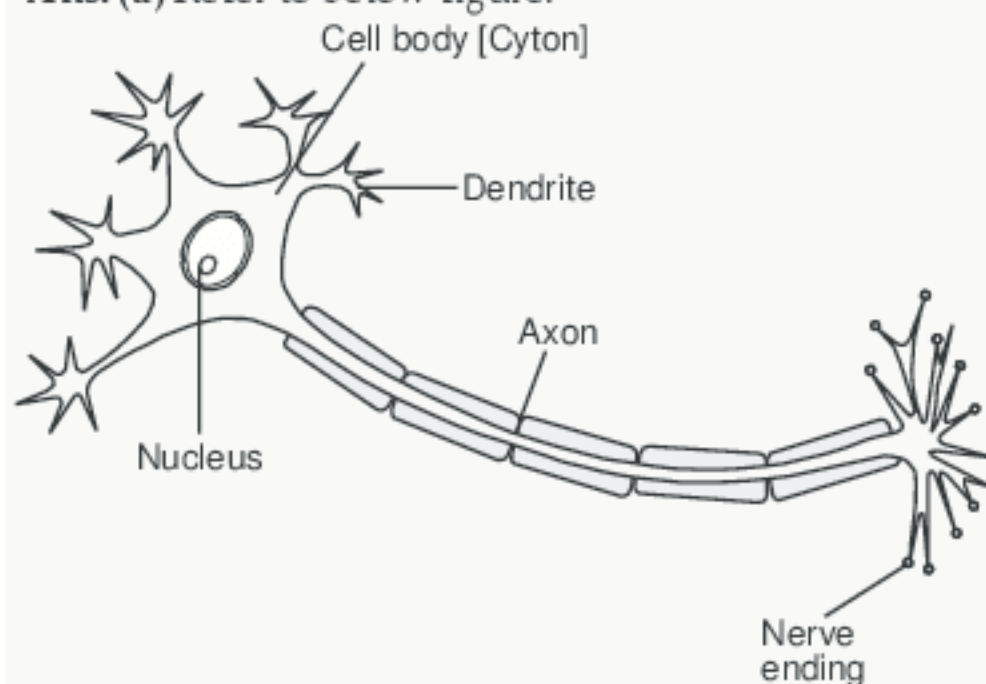
(iii) where this impulse must be converted into a chemical signal for onward transmission

(c) Define neuromuscular junction.

[Board Term-I, 2016]

[NCERT Exemplar 2017]

Ans. (a) Refer to below figure.



(b) (i) Dendrite (ii) Axon (iii) nerve ending.

(c) Neuromuscular junction is a chemical Synapse formed by the contact between a motor neuron and a muscle fiber.

[CBSE Marking Scheme 2016] 2+3

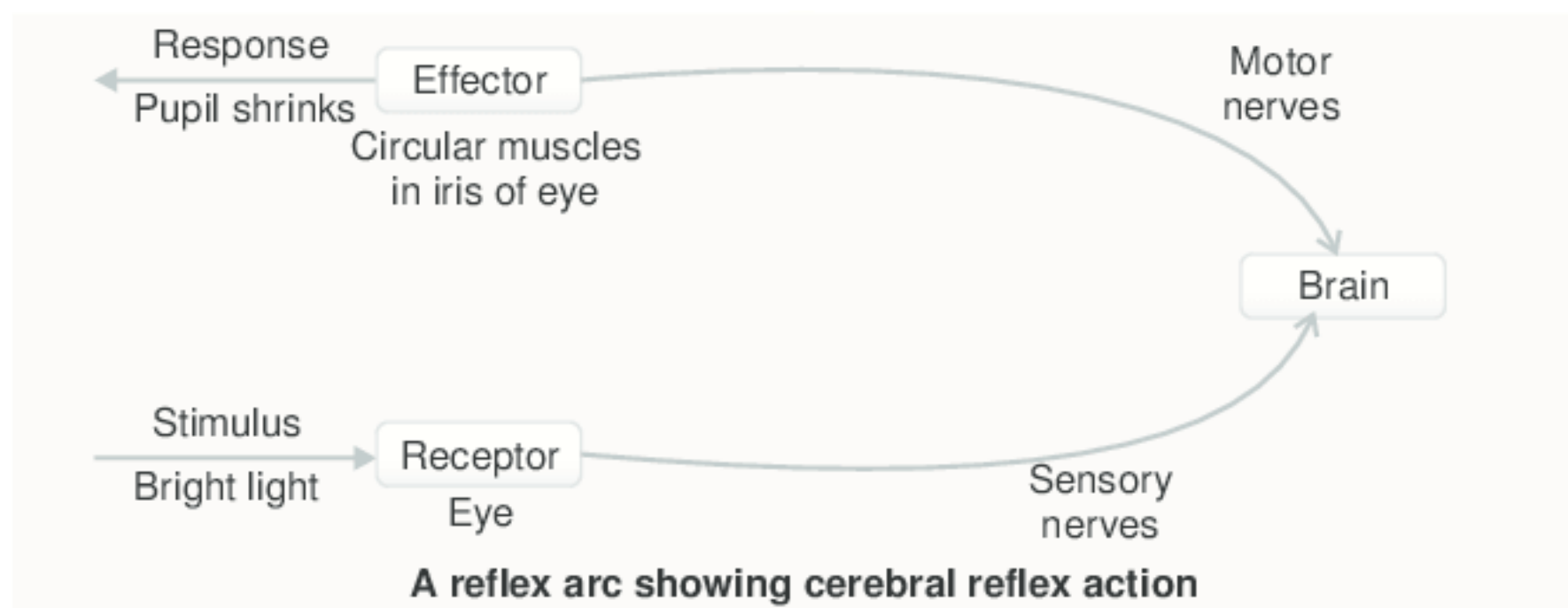
Q.3. (i) Define reflex arc. Draw a flowchart showing the sequence of events which occur during sneezing.

(ii) List four plant hormones. Write one function of each.

[DDE-2015, 17, Board Term-I Set JYNE6XG, 2015]

Ans.

(i) The pathway taken by nerve impulses in a reflex action is called the reflex arc :



(ii) **Auxin** : It promotes elongation and division of cell and root formation.

Gibberellins : They help in growth of stem.

Cytokinins : They promote cell division and delay leaf ageing.

Abscisic acid : It prevents wilting of leaves.

3+2

Q. 4. (i) Define reflex action. State its significance.

(ii) How do plants respond to external stimuli ?

[Board Term-I, Set-2ZGOVVV, 2015]

Ans. (i) Reflex action : It is defined as an unconscious, automatic and involuntary response of effectors, *i.e.* muscles and glands, to a stimulus, which is monitored through the spinal cord.

Significance : It protect us from any sudden stimulus which may harm us.

(ii) Plants produce hormones and respond to external stimuli, by growing towards sources of water and light, which they need to survive. A tropism is a growth in response to a stimulus and an auxin is a plant hormone produced in the stem tips and roots, which controls the direction of growth. 1+2+2

Q. 5. (i) Write names of hormones secreted by pituitary gland and adrenal gland. State their functions in the body.

(ii) Explain feedback mechanism for regulation of hormonal secretion with the help of one example.

[DDE-2015]

Ans. (i) Pituitary gland secretes growth hormone. It regulates growth and development of the body. Adrenal gland secretes adrenaline hormone. It creates stress in our body.

(ii) The timing and amount of hormones released by various glands is controlled by feedback mechanism which is in built in our body, *e.g.* if sugar level in blood rises too high, it is detected by cells of pancreas which respond by producing and secreting more insulin into blood. As blood sugar falls to certain level, the secretion of insulin is reduced automatically. 2+3

Q. 6. What constitutes the central and peripheral nervous system ? How are the components of central nervous system protected ?

[Board Term I, 2011]

Ans. Central Nervous System : It is hollowed part of nervous system that lies along the mid-dorsal part of the body. It has two parts-brain and spinal cord.

Peripheral Nervous System : It is solid lateral part of nervous system that develops from CNS and connects different parts of the body with CNS.

Peripheral nervous system has two components : Voluntary and Involuntary-Voluntary peripheral nervous system is under the control of will. It consists of cranial nerves from brain and spinal nerves from spinal cord.

Involuntary peripheral nervous system works independent of will. Involuntary peripheral nervous system is also called autonomic nervous system. It has two parts- sympathetic and parasympathetic. They control the functioning of various internal body parts. 4

Protection of brain : Cranium. ½

Protection of spinal cord : Vertebral column. ½

Q. 7. (a) What is the function of mid brain ?

(b) Name the three different parts of hind brain and give one function of each.

[Board Term-I, Set-A1, 2010]

Ans. (a) Mid brain controls many of the involuntary actions. 1½

(b) Hind brain : It has three parts :

(i) Pons

(ii) Medulla

(iii) Cerebellum. 1

Functions :

(i) Pons has centre for regulating the breathing rhythm.

(ii) Medulla controls involuntary functions like blood pressure, salivation, vomiting etc.

(iii) Cerebellum is responsible for 1½

(a) Precision or co-ordination of voluntary actions.

(b) Maintaining the posture and balance of the body. (Any one) 1

Q.8. (i) Draw a neat labelled diagram of human brain.

(ii) Name the gland that secretes insulin. Why are some patients of diabetes treated by giving injections of insulin ? [NCT-2014]

Ans. (i) Human brain : Short Answer Type Questions-II- Q 1. Pg. 164.

(ii) Pancreas secretes insulin.

Insulin helps to lower the blood glucose level. When it is secreted in less amount, the body suffers from diabetes, as more and more glucose accumulates in the body. So, to reduce the level of glucose in the blood of the diabetes patients, they are provided with insulin injections. 2

Q.9. What are hormones ? Give the name of associated gland and functions of different animal hormones.

[DDE 2017][NCERT Exemplar 2017]

Ans. Hormones are the chemical substances which co-ordinate and control the activities of living organisms and also their growth.

S. No.	Hormone	Endocrine Gland	Location	Functions
1.	Thyroxine	Thyroid	Neck/Throat region	Regulation of metabolism of carbohydrates, fats and proteins.
2.	Growth hormone	Pituitary (master gland)	Mid brain	Regulates growth and development.
3.	Adrenaline	Adrenal	Above both kidneys	Regulation (increasing) of blood pressure, heart beat, carbohydrate metabolism (during emergency)
4.	Insulin	Pancreas	Below stomach	Reduces and regulates blood sugar level
5.	Testosterone in males	Testis	Genital/lower abdomen area	Changes associated with puberty (sexual maturity)
6.	Estrogen in females	Ovaries	Genital/lower abdomen area	Changes associated with puberty (Sexual maturity)

Q.10. (a) Define hormone. Write any four characteristics of hormones in humans.

(b) Name the disorder caused by following situations

(i) Under secretion of growth hormone.

(ii) Over secretion of growth hormone.

(iii) Under secretion of insulin.

(iv) Deficiency of Iodine.

Ans. (a) Hormones are the chemical substances which co-ordinate and control the activities of living organisms and also their growth.

Characteristics of hormones are :

(i) They are chemical messengers

(ii) Regulate behaviour of target cells.

(iii) They stimulate the target organs.

(iv) They are proteinaceous or non-proteinaceous in nature.

(b) (i) Dwarfism

(ii) Tallness

(iii) Diabetes

(iv) Goitre

3+2

(b) How does our body respond when adrenaline is secreted into the blood ?

(c) Cite an example to explain the feedback mechanism for regulation of hormonal secretion.

[Board Term-I, Set-A1, 2010]

Ans. (a) Insulin : Regulates sugar metabolism, maintain blood sugar level.

Glucagon : Increases blood sugar level. 1

(b) Blood takes adrenaline to its target sites : Our heart beats faster resulting in more supply of O₂ and glucose to our muscle. In liver, glycogen changes into glucose. 1

Breathing increases. This makes more O₂ available.

Blood supply to digestive system and skin is reduced and more blood is passed to skeletal muscles. 1

(c) The timing and amount of hormone released are regulated by feedback mechanism. 1

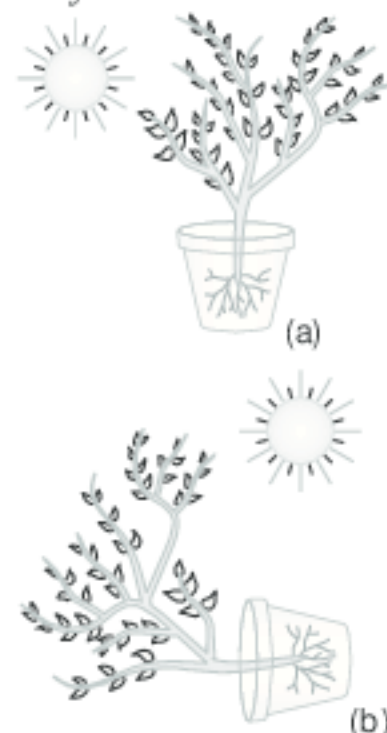
Example : When sugar level in blood rises more insulin is secreted. Insulin removes extra glucose from the blood by converting into glycogen. 1

Falling glucose level reduces insulin secretion by pancreas.

Q.11. (a) Name two hormones secreted by pancreas. Write one function of each hormone.

High Order Thinking Skills (HOTS) Questions

- Q.1. This is an experimental set up, where pot number (a) is kept as control. When we drop the pot horizontally what will we observe if the experiment is done to detect the response of plant towards gravity ? 3



Ans. We will observe figure number (b). This figure depicts the correct response of plant towards gravity. The response of plants towards gravity is known as geotropism. Roots respond by moving towards the centre of gravity, while shoots move in the opposite direction of gravity. 3

- Q.2. In plants, nervous system is absent. How do plants control and co-ordinate different activities ? 3

Ans. In plants, the control and co-ordination is entirely chemical. Plants coordinate their behaviour against environmental changes with the help of Hormones. Plants have various hormones that help them to

coordinate growth and response to environment. These are the chemical compounds which are released by stimulated cells. Hormones are diffused around the cell. Different hormones in plants are Auxins, Gibberellins, Cytokinins and abscisic acid. 3

- Q.3. Name the property that causes tendril to circle around the object. Explain how it happens and how is plant benefitted by it.

[Board Term-I, Set-31, 2012] 3

Ans. Sensitivity to touch : 1½

When tendril of a plant comes in contact with any object, the part of the tendril in contact with the object does not grow as rapidly as that part which is away from the object. This causes the tendril to circle around the object. 1½

The plant gets the support of the object for growing upward without falling. 1

[CBSE Marking Scheme, 2012]

- Q.4. If accidentally we step on something sharp at once we move our foot away. What is this type of response known as ? State how it is controlled. 3

Ans. Response → Reflex action.

- A receptor to perceive the stimulus.
- A sensory or afferent nerve which carries the message from receptor to spinal cord.
- The neurons of spinal cord transmit the impulse from afferent neurons to efferent neurons.
- Motor nerve carries message from spinal cord to the muscles that show response. 1+2

Value Based Questions

- Q.1. Mayank's father never bothered to check the brand/contents of the salt he had purchased from the market. Mayank noticed that her sister had developed swollen neck. The doctor advised her to eat iodised salt.

- Name the disease from which Mayank's sister suffered.
- Why the doctor has advised her to eat iodised salt ? 2

Ans. (i) Goitre/Thyroid related disease.

- Iodine present in iodised salt is needed to produce thyroxine hormone. 1

Associated Value : The learners will only take up iodised salt in their meal in order to check iodine deficiency disease. 1

- Q.2. Injections are given to the cattle for the production of milk.

- Do you think it is a right practice ?
- What harm is this practice causing us ? 3

Ans. (i) No.

- Intake of such contaminated milk may cause various health disorders. 2

Associated Value : The learners will become more vigilant while taking milk or milk products and would prefer to take them from registered outlet like-Mother Dairy, DMS etc. 1

- Q.3. Often road accident victims face really tough time due to the shortage of blood in the hospital.

Give suggestion to avoid shortage of blood in the blood bank. 3

Ans. (i) Spread awareness that blood donation is a healthy social habit.

- Sensitizing and encouraging people with the help of Nukkad Natak, Media etc. to participate in blood donation camp. 2

Associated Value : It will motivate the learner in believing that blood donation is a social value and duty of human being. 1

Q. 4. A person is taking insulin injection every day.

(i) Name the disease he is suffering from.

(ii) How does healthy life style help this patient to control this disease ?

Ans. (i) Diabetes (Type-II).

(ii) Regular exercise, taking balanced diet avoid sweet food item, cola etc.

Associated Value : The learner will understand that diabetes is a metabolic disease and can be controlled with balanced diet and regular exercise.

Q. 5. Most of the students suffer from exam stress and anxiety during exam days, suggest three good habits which students should adopt to tackle this problem.

Ans. Good habits to beat the exam stress :

(i) Regular study hours.

(ii) Taking balanced /light diet.

(iii) Exercise/walk with good speed in the morning/evening.

(iv) Regular break.

Associated Value : The learners will be able to handle exam stress in a better way by following disciplined and planned studies.

Q. 6. Generally some teenagers readily come under bad influences under peer group pressure.

(i) Why do teenagers readily come under this influence ?

(ii) Suggest methods to overcome such problems.

Ans. (i) Adolescence brings about the hormonal secretion among teenagers. This leads to some physical and emotional changes among them which are difficult to handle by them.

(ii) (a) Proper counselling of teenagers should be arranged from the counsellor.

(b) Healthy communication with parents.

(c) Teenagers should be properly motivated to set realistic goals.

Associated Value : The learner will be able to handle various challenges of adolescent stages in a much better way.

Q. 7. Electrical impulses are an excellent means of quick transfer of information in animals but there are limitations to the use of electrical impulses. List such two limitations. State the other means of communication used by most multi-cellular organisms between the cells.

[Board Term-I Set-46, 2012]

Ans. Two limitations are :

(i) They reach only those cells that are connected by nervous tissue and not each and every cell in the animal body.

(ii) Once an electrical impulse is generated in a cell and transmitted, the cell will take some time to reset its mechanisms before it can generate and transmit electrical impulse.

Other means of communication is chemical communication or chemical co-ordination by compounds called hormones.

Q. 8. A gland secretes a particular hormone. The deficiency of this hormone in the body causes a particular disease in which the blood sugar level rises.

(i) Name the gland and the hormone secreted by it.

(ii) Mention the role played by this hormone.

(iii) Name the disease caused due to deficiency of this hormone.

[Board Term I Set-46, 2012]

Ans. (i) Pancreas, hormone — Insulin.

(ii) Helps in regulating the blood sugar levels.

(iii) Diabetes.

Know the Links

- mycbseguide.com
- gradedstack.com
- schools.aglasem.com
- dronstudy.com

