Control and Coordination

---

1 Mark Questions

1. Junctions of two neurons in called.

a) Synapse

b) Synapsis

c) Joint

d) Junction

Ans. a) Synapse

---

2. Which of the following is a plant hormone?

a) Insulin

b) Thyroxin

c) Oestrogen

d) Cytokinin

Ans. d) Cytokinin

---

3. When a person is suffering from severe cold, he or she cannot –

a) Differentiate the taste of an apple form that of an ice – cream.

b) Differentiate red light from green light.

c) Differentiate a hot object form a cold object.

d) Differentiate the smell of a perfume form that of an agarbatti

Ans. (d) Differentiate the smell of a perfume form that of an agarbatti.

---

4. What do you mean by geotropism?

Ans. Downward movement of roots in response to Gravitational force is called geotropism.

---

5. Name the two sets of nerves that constitute the peripheral nervous system.

Ans. Sympathetic nervous system and Parasympathetic nervous system.

---

6. The brain is lodged inside the cavity of skull known as :

a) Piamater

b) Duramater

c) Cranium

d) Meninges

Ans. c) Cranium

---

7. Electrical impulse travels in a neuron from –

a) Dendrite → axon → axonal end → cell body.

b) Cell body → dendrite → axon → axonal end.

c) Dendrite → cell body → axon → axoanl end.

d) Axonal end → axon → cell body → dendrite.

Ans.

Dendrite → cell body → axon → axonal end

---

8. Which hormone brings about development of mammary gland?

a) Estrogen

b) Progesterone

c) Relaxin

d) Oxytocin

Ans. Estrogen

---

9. Name the hormone which promotes plant growth.

Ans. Auxin

---

10. Which part of the brain maintains posture and equilibrium of the body?

Ans. Cerebellum

---

11. Which one of the endocrine glands is known as master gland?

a) Pituitary

b) Adrenal

c) Thyroid

d) Parathyroid

Ans. a) Pituitary

---

12. The growth of tendrils in pea plants is due to

a) effect of light

b) effect of gravity

c) rapid cell division in tendrillar cells in contact with the support

d) rapid cell divisions in tendrillar cells that are away from the support

Ans. d) rapid cell divisions in tendrillar cells that are away from the support

---

13. Dwarfism results by –

a) Excess secretion of thyroxin

b) Less secretion of growth hormone

c) less secretion of adrenaline

d) Excess secretion of growth hormone.

Ans. d) Excess secretion of growth hormone.

---

14. Write the function of hormone "thyroxine" produced in our body.

Ans. It controls overall metabolic rate of the body.

---

15. Name the hormones secreted by pancreas.

Ans. Insulin and Glucagon.

---

16. The neurons that carry nerve impulse from spinal cord to effectors are called –

a) Sensory neurons

b) motor neurons

c) Inteneurons

d) spinal neurons

Ans. Motor neurons.

---

17. Select the mismatched pair

a) Adrenaline – Pituitary gland

b) Testosterone – Testes

c) Estrogen – Ovary

d) Thyroxin – Thyroid gland.

Ans. Adrenaline – Pituitary gland.

---

18. Which one of the following is a nastic movement in plants?

a) Bending of plants towards light

b) Growing of roots towards gravity.

c) Droping of touch – me – not leaflets on touch

d) Movement of pollen tubes towards chemicals.

Ans. Drooping of touch me – no leaflets on touch.

---

19. What is the function of occipital lobe?

Ans. Occipetal lobe – visual perception.

---

20. Which part of brain links the endocrine system with nervous system?

Ans. Hypothalamus

---

21. Visceral nervous system controls and integrates the function of –

a) Urinary bladder

b) Blood vessels

c) Heart

d) All of the above

Ans. d) All of the above

---

22. Which of the following statements are true about the brain?

(i) The main thinking part of brain is hind brain.

(ii) Centers of hearing, smell, memory, sight, etc are located in fore brain.

(iii) Salivation, vomiting, blood pressure are controlled by the medulla in the

hind brain.

(iv) Cerebellum does not control posture and balance of the body.

a) (i) and (ii)

b) (ii) and (iii)

c) (i), (ii) and (iii)

d) (iii) and (iv)

Ans. (iii) and (iv)

---

23. The substance that result into the fall of mature leave and fruits from plants is due to :

a) auxin

b) gibberllin

c) ABA

d) cytokinin

Ans. b) gibberllin

---

24. Name the structural and functional unit of nervous system.

Ans. Neuron (nerve cell)

---

25. Name one sex hormone.

Ans. Testosterone.

---

26. Which part of the brain maintains posture and equilibrium of the body?

Ans. Cerebellum

---

27. Give an example of a plant hormone that promote growth.

Ans. Auxin promotes growth of cells.

---

28. Which of the following is a plant hormone?

(a) Insulin

(b) Thyroxin

(c) Oestrogen

(d) Cytokinins

Ans. (d) Cytokinins

---

29. The gap between two neuron is called a

(a) Dendrite

(b) synapse

(c) axon

(d) impulse

Ans. (b) synapse

---

30. The brain is responsible for

(a) thinking

(b) regulating the heart beat.

(c) balancing the body

(d) all of above.

Ans. (d) all of above.

---

31. What name is given to the microscopic gap between two adjacent neurons?

Ans. Synapse

---

32. If we step on something sharp accidently we move our foot away at once what is this type of response known as?

Ans. Reflex action

---

33. Apart of the hind brain makes possible activities like walking, skating, riding a bicycle and picking up a pencil.name this part of the hind brain.

Ans. Cerebellum

---

34. Name the plant hormone:

(a) which inhibits growth and causes wilting of leaves.

(b) which promotes cell division.

Ans. a. Abscisic acid.

b. Cytokinins.

---

35. Who transmits nerve impulse across the synapse?

Ans. Neurotransmitters.

---

36. Give reason why endocrine glands release theft secretions into the blood?

Ans. Endocrine glands are ductless glands and their products have to act at a distant site.

2 Mark Questions

1. How involuntary actions and reflex actions are different form each other?

Ans.

Involuntary action	Reflex action
The action which we cannot do by thinking about them is called involuntary action.	An action or response which in immediate and that does not need processing by the brain is called reflex action.
Involuntary actions are controlled by brain	Reflex actions are controlled by spinal cord.

---

2. Why is the use of iodised salt advisable?

Ans. Iodine is required by the thyroid gland to make thyroxine hormone. Iodised salt provides iodine needed by thyroid gland to make sufficient thyroxin for our body. The use of iodised salt prevents risk of goiter.

---

3. Name the centre of the brain that controls

(i) Swallowing

(ii) hearing

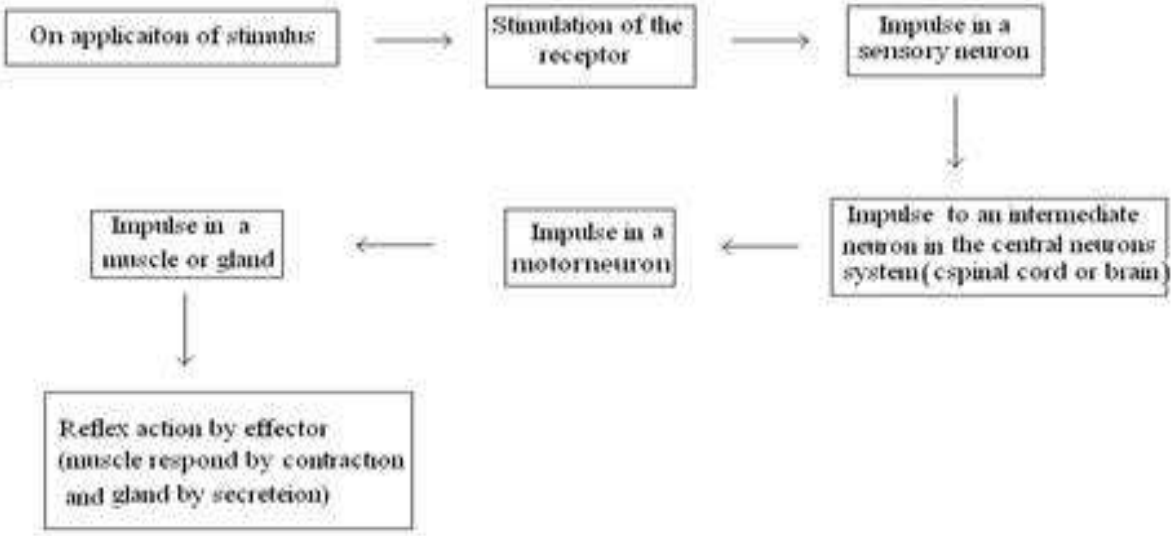
Ans. (i) Medulla oblongata in hind brain.

(ii) Swallowing cerebrum in fore brain – Hearing

---

4. Represent schematically the path of a reflex action.

Ans.



---

5. Why are some patients of diabetes treated by giving injections of insulin?

Ans. Insulin hormone which is secreted by pancreas regulates the levels of sugar in the blood. In diabetic patients it is not secreted in required amount therefore blood sugar level rises and causes various harmful effects. So, to prevent these effects some patients of diabetes are treated by giving injections of insulin.

---

6. Which signal will get disrupted in case of a spinal cord injury?

Ans. (i) It disturbed all the involuntary actions.

(ii) Reflex actions will be disrupted because reflexes are located in the spinal cord. Therefore, the quick response required to safe guard the body will not take place.

---

7. How does a touch – me – not plant respond on touching? What is this movement called?

Ans. Touch – me – not plant folds its leaflets on touching. This type of movement is called Growth independent movement.

---

8. What are phytohormones? Name them.

Ans. Phytohormones are special chemical compounds released by different parts of plant. They help to co – ordinate growth, development and responses to the environment. They are synthesized at site away from where they act and simple diffuse to the area of action. These are –

a) Auxin

b) Gibberlins

c) Cytokinin

d) Abscisic acid

e) Ethylene.

---

9. What is the role of the brain in reflex action?

Ans. A reflex action is one which we perform automatically. The sensory and motor nerves meet at a point in the spinal cord on their way to the brain. Thus the information through sensory nerves goes to the brain, where thinking process occurs. But if the reflex action is instant where thinking in not involved then the brain has no role.

---

10. How is control and co – ordination between environment and plants brought about?

Ans. Plants do not have a nervous system for control & co – ordination like animals but do give response to external stimuli like touch, light and chemicals etc.

plants responses are mainly of two types – Growth dependent and growth in dependent response.
Growth in dependent Responses are because of change in the amount of water.
Growth dependent responses are due to cell divisions.

---

11. Give two examples of function in plants that are regulated by light
Ans. 1) Breaking of dormancy (seed germination)
2) Flowering

---

12. What is co – ordination? Give an example.
Ans. The working together of the various systems in a body to adjust the vital activities of life is called co – ordination. Forex – the nervous system receives information form the surroundings, then processes and interprets it and finally responds accordingly. The endocrine system helps in control and co – ordination.

---

13. How endocrine glands do helps in maintaining feedback control?
Ans. The timing and amount of hormones released are regulated by feedback mechanism. For example, glucose level in the blood is maintained constant (0.1%). The blood glucose levels may be maintained constantly by either of the following feedback mechanism.
a) High glucose level in the blood induces the pancreatic cells to produce insulin which converts glucose to glycogen.

b) Less glucose level in the blood do not induce the pancreatic cells to produce insulin so that less conversion of glucose to glycogen may occur.

14. Which types of glands in human body secrete hormones? State any one location for them.

Ans. There are three types of glands which secrete hormone in human body-
a) Exocrine gland – these are duct glands which do not secrete their secretion into the blood. For ex – salivary gland. it secretes salivary amylase which digest starch.

b) Endocrine – gland – These are ductless gland, and they pour their secretion in blood. For ex – Pituitary gland. It is master gland, controls most of the activities.

c) Heterocrine gland – which act as both endocrine and exocrine type of glands. For Ex Pancreas – Endocrine part produces hormone insulin and glycogen and exocrine part produce digestive enzymes.

---

15. What is the result of hypothyroidism in children called?

Ans. Hypothyroidism in children called exophthalmic goiter. It causes bulging of eyes, Increases blood pressure and heart beat.

---

16. How following is affected in plants by various hormones?

Ans. Hormones like Auxins, cytokinin promotes female flowers. Whereas Gibberellins promote male flowers. Ethylene promote flowering in some plants like pineapple Phytohormones and duration of light also induce flowering in long day plants and short day plants.

---

17. Name the fluid filled between the menings of the brain. What are its functions?

Ans. Cerebrospinal fluid. It protects the brain form mechanical shocks.

---

18. Name any two heterocrine glands and mention their function.

Ans.

Heterocrine gland	Endocrine function	Exocrine function
Pancreas	Produce insulin & glucagon	Produce digestive enzymes
Ovaries	Produce estrogen and progesterone hormone	Produce female gametes

---

19. What is the response of stem towards light & gravity?

Ans. Stem show positive response towards light and negative response toward gravity.

---

20. Name two activities which are regulated by plant pigments.

Ans. 1) some specialized pigments, phytochromes are responsible of the response to photoperiodic stimulus.

2) The control and co – ordination in plants with its environment is regulated by phytohormoens & phytochromes together.

---

21. How do we detect the smell of an agarbatti (incense stick)?

Ans. Smell of agarbatti is detected by olfactory receptors in the temporal lobe of fore-brain. It is first received by olfactory receptors in our nose.

---

22. What is the role of brain in reflex action?

Ans. Reflex arcs are formed in the spinal cord itself although the information also goes on to brain where the encounter remains the memory and make us aware of our action.

---

23. What are plant hormones?

Ans. They are chemical which help to coordinate growth, development, flowering and response to the environment in plants.

---

24. How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light?

Ans. Difference between movement of leaves of sensitive plants and movement of shoot towards light:

Movement of leaves of sensitive plant	Movement of shoot towards light
(i) Growth is not involved. (ii) Movement is away from the source of stimulus (touch).	(i) Growth is involved. (ii) Movement is towards the source of stimulus (light).

---

25. How does chemical coordination take place in animals?

Ans. The chemical coordination is maintained by hormones. These are secreted by endocrine glands. These hormones are poured into blood through which they reach the target tissue or organ to act.

---

26. Why is the use of iodised salt advisable?

Ans. Iodine is necessary for the thyroid gland to make thyroxin hormone. In case, iodine is absent in our diet, there is a possibility of Goitre. Iodised common salt

contains proper content of iodine. To avoid deficiency of iodine, iodised salt is recommended.

---

27. Jive one example of plant part.

a. Which is positively hydrotropic as well as positively geotropic.

b. Which is positively phototropic but negatively geotropic.

Ans. a. roots

b. stem

---

28. The neck of a person appears to be swollen.

a. Name the disease this person suffering from.

b. Name the mineral whose deficiency in the diet causes this disease.

Ans. a. Goiter

b. Iodine

---

29. Taking the example of heart beat, justify the antagonistic action of the sympathetic and 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

---

30. Why is abscise acid known as stress hormone in plants?

Ans. Abscise acid in a plant hormone which inhibits growth. Its effects include wilting of leaves.

---

31. Name the part of neuron

(a) where information is acquired.

(b) through which information travels as an electrical impulse.

Ans. a. Dendrite

b. Axon

---

32. Why do leaves drop off seasonally?

Ans. The leaves drop off seasonally as they stop producing axing, which normally prevents the formation of abscission zone that cuts off nutrients and water supply to leaves.

Therefore, they release their secretions into the blood.

---

33. A person suffered a head injury, due to which he faces breathing problem. No problem was detected with his respiratory system. What could be the cause of this problem?

Ans. As the problem is caused due to head injury, it could be related to “Pons” a part of Hind brain responsible for regulation of respiration.

---

34. In a family of normal sized members, there are two exceptions, one member is dwarf and one is tall like “Khali”. What could be the cause of it?

Ans. In case of dwarfs, there is a deficiency of growth hormone from Pituitary gland and in case of giants excess or growth hormone is produced during childhood.

---

35. Why do you blink your eyes as bright light is focused on you?

Ans. We blink in order to protect the eye from bright light which otherwise would damage the retina.

---

36. There is a polled plant in your drawing room, after few days you note that plant has bent to one side. What could be the reason? How has this movement been coordinated?

Ans. The plant has bent to one side due to phototropic movement of the stem. This movement is due to unequal growth of the stem on both sides. This growth is initiated by the hormone auxin.

---

37. A leaf shaped gland is present above the intestine. The secretion of this gland regulates the metabolism of sugar in blood. Name the secretion and gland.

Ans. The name of the gland is pancreas. The secretion is Insulin from special cells in it.

3 Mark Questions

1. Mention three important functions of gibberellins.

Ans. Functions of Gibberllins –

(i) Stimulate stem elongation.

(ii) Help in breaking seed dormancy.

(iii) Promote flowering in some plants even under unfavorable conditions

(iv) Help in seed germination.

(v) Promote production of male flowers.

---

2. What is the function of receptors in our body? What happens when receptors do not work properly?

Ans. The function of receptors is to defect information form the environment. If receptors do not work properly, the information obtained form the environment will be delayed to reach the spinal cord or brain. In this situation, the response to the environmental stimulus will be delayed causing harm to the body.

---

3. What happens at the synapse between two neurons?

Ans. The nerve impulse gets transmitted through the synapse by means of chemical signals. When a stimulus acts on the receptor, chemical reaction is set off which produces an impulse in it. This impulse travels form the dendrite of presynaptic neuron to its cell body and then along its axon. At the end of axon of this neuron, the electrical impulse releases tiny amount of a chemical substance crosses the synapse and starts a similar electrical impulse in the dendrite of the next neuron.

---

4. What is the need for a system of control and co – ordination in an organism?

Ans. a) It evokes an appropriate movement in response to any change in external environment

b) Multicellular organisms have complex body. So it, co – ordinates various organs of body of an organism work together in a proper manner to produce proper reaction to stimulus

---

5. Pituitary is a master endocrine gland. Justify this statement.

Ans. Pituitary gland is also known as master gland because it controls the activities of most of the gland.

It regulates the secretion of other glands. Like-

a) Growth hormones – Body growth and development of bones

b) Thyroid stimulating hormone – Secretion of hormones form thyroid gland.

c) Adrenocorticotropic hormone – Secretion of hormones form adrenal glands.

d) Follicle stimulating hormone – Stimulating of growth of ovaries and testes

e) Luteinsing hormone – Secretion of hormone from ovaries & testes

f) prolactin – Regulation of function of mammary gland. Hence, most of functions are controlled by pituitary gland so it is called master gland.

---

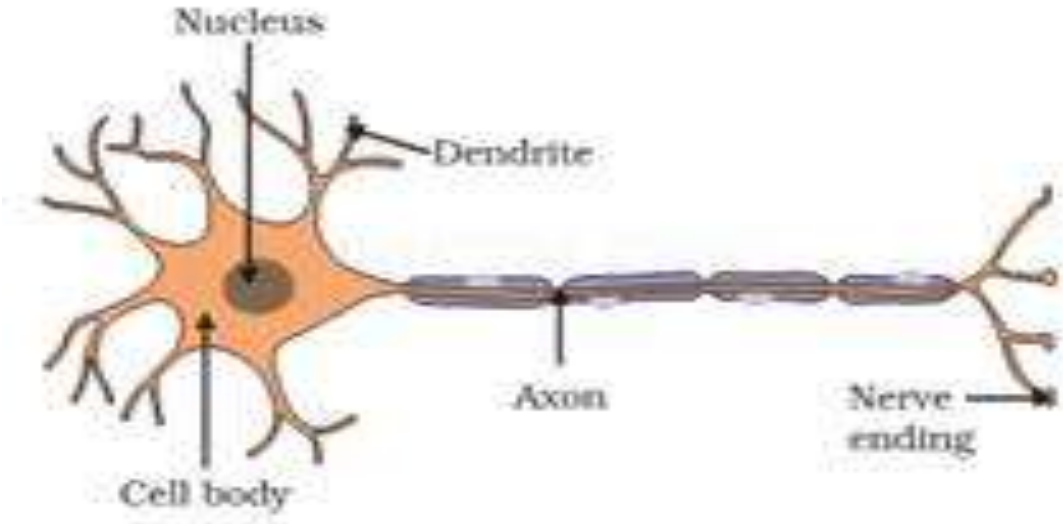
6. Draw the structure of neuron and explain its function.

Ans. Neuron has three components –

(i) Cell body

(ii) Dendrites

(iii) Axon



The dendrite picks up the nerve impulse from receptors and then pass the impulses

to the cell body and then along the axon. The axon passes the impulse to another neuron through a junction called synapse.

---

7. How does our body respond when adrenaline is secreted into the blood?

Ans. When adrenaline is secreted into the blood, it prepares our body for action. It speeds up heart beat and breathing, raises blood pressure and allows more glucose to go into the blood to give us a lot of energy quickly to fight or urn away from frightening situation. The blood supply decreases form the skin and digestive system and increase to skeletal muscles. All there conditions help the individual to respond the emergency situation.

---

8. Where are Pons and medulla oblongata located? Write their functions.

Ans. Pons and medulla Oblongata are located in hind brain.

Pons acts as bridge between brain and spinal cord.

Medulla oblongata –

a) It is the reflex centre to control activities like salivation, swallowing, vomiting, breathing, coughing, sneezing and heart beat

b) It also controls sleeps, consciousness and activities of cerebrum

---

9. List the function of testosterone and estrogen. Where are they secreted?

Ans. Testosterone is secreted in males – It is responsible for development of male sex organs and secondary sex characteristics like moustache, beard & voice.

Estrogen is secreted in females – it is responsible for development of female sex organs and secondary sex characteristics like mammary gland and uterine growth.

---

10. Define 'nerve impulse'. Which structure in a neuron helps to conduct a nerve impulse?

a) Towards the cell body?

b) Away from the cell body?

Ans. Nerve Impulse – It is the passing of information through neurons is in the form of electrical and chemical signals. This is called nerve impulse.

a) Dendrite

b) Axon

---

11. Differentiate between axon and dendrons?

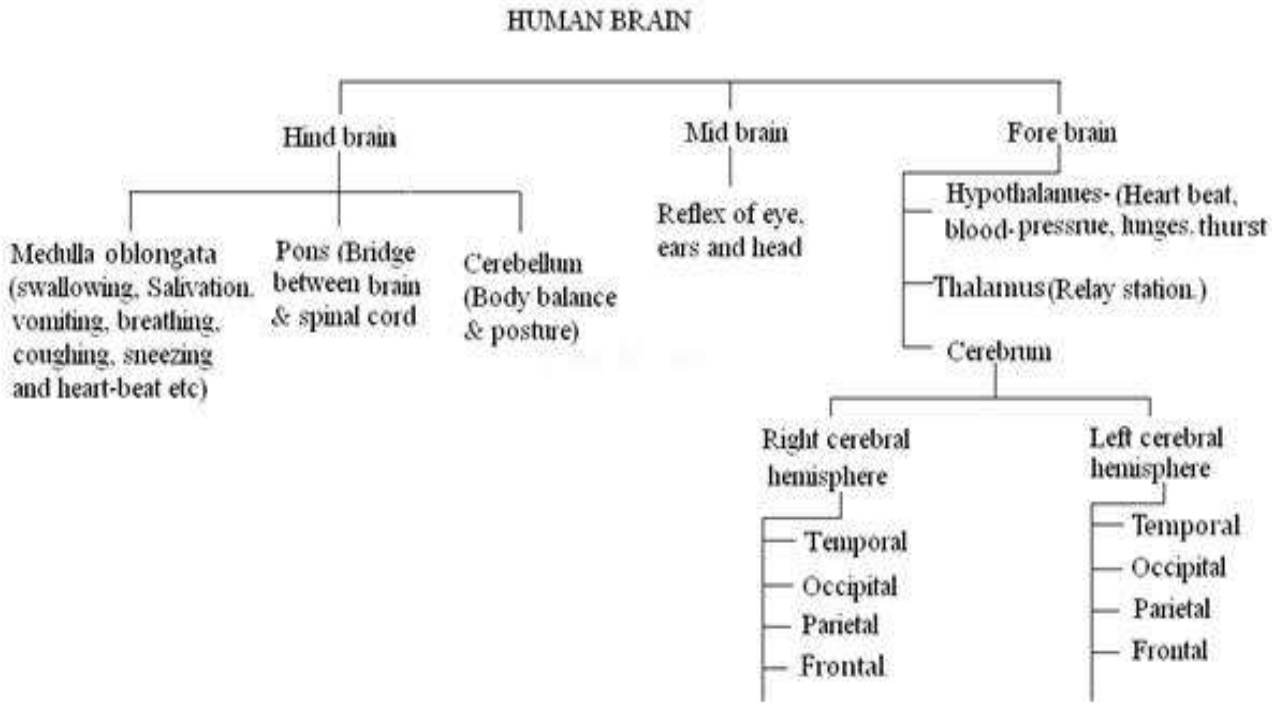
Ans.

Axon	Dendron
They are long in size and one in number	They are small in size and numerous.
Generally unbranched	Branched
Terminal branches have swollen knobs	Terminal swollen knobs are absent.
Direction of nerve impulse is away from cyton	Direction of impulse is towards cyton.

---

12. Mention the structure of human brain.

Ans.



---

13. What are tropic movements? Name the types of tropic movements in plants.

Ans. The bending or movement of a part of plant in response to the external stimulus is called tropism or tropical movement. It is of following types.

(a) Phototropism – It is response to light. It may be towards light (positive) or away from the light (negative).

(b) Geotropism – It is response to gravity – It may be towards stimulus (positive) and away from the stimulus (negative)

(c) Chemotropism – Response to chemicals. It may be positive or negative.

(d) Hydrotropism – Response to water. It may be positive or negative.

---

14. Name the different lobes of cerebrum.

Ans. Different lobes of cerebrum –

a) Frontal lobe – It is associated with reasoning.

b) Parietal – Perception of general sensation s like pressure, touch and pain.

c) Occipital – Visual perception.

d) Temporal – Important for interpreting sounds and the language we hear and formation of memories.

---

15. How do auxins promote the growth of tendril around a support?

Ans. When the tip of a tendril touches a support, then the auxins present in its tip move to that side of tip which is away form the support, auxins promote growth. So, due to more auxins in it, the side of tendril, away from the support, grow faster and becomes longer than the side which is in contact with the support and makes the tendril curve towards the support.

---

16. Write different between exocrine and endocrine glands.

Ans.

Exocrine gland	Endocrine gland
Glands with ducts.	Ductless glands
They secrete enzymes	They secrete the hormones
Pour their secretion in ducts of the gland.	Pour their secretion directly into blood
Glands are located nearby the site of action	Glands are located away form the site of action

---

17. What are the different kinds of neurons?

Ans. Kinds of neurons –

a) Sensory neurons – convey impulses from receptors to the main nervous system.

b) Motor neurons – carry impulses from the main nervous system to an effector.

c) Connecting (Relay) neurons – connect sensory and motor centres.

---

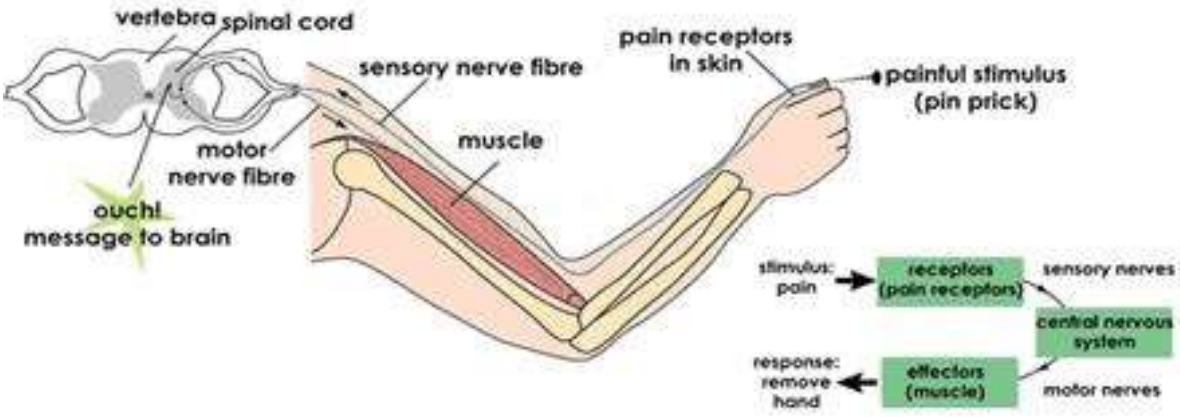
18. How does chemical co-ordination takes place in animals. Mention their function.

Ans. The chemical co – ordination in animals takes place through hormonal system called endocrine system. Animal hormones are chemical messengers which are directly poured into the blood by the endocrine glands. Thus, a hormone reaches to the cells. The cells have special molecules on their surface to detect these chemical compounds and recognize the information a particular hormone carrying. There the cells act accordingly. The chemical co – ordination is fast as hormones diffuse readily around the cells.

---

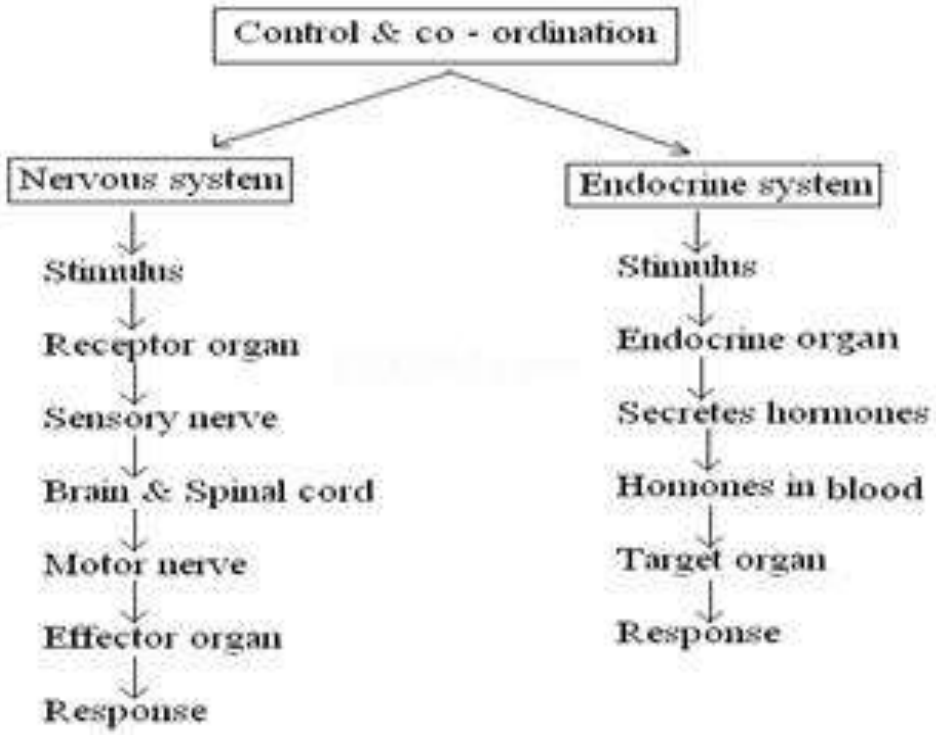
19. You have touched a hot object. Represent diagrammatically the path that leads to a response, i.e. quickly pulling back the hand.

Ans.



20. Nervous and hormonal system together performs the functions of control and co – ordination in human beings. Justify the statement.

Ans. A number of interactions between the environment and the animal are a result of combined action of both neurons and endocrine system for which specialized tissues are used to provide control and co – ordinations activities.



21. What is the difference between a reflex action and walking?

Ans. Difference between reflex action and walking:

Reflex action	Walking
(a) Take place without thought. (b)Controlled by spinal cord. (c) It is involuntary action	(a) Takes place after thought. (b) Controlled by cerebellum. (c) It is a voluntary action.

---

22. What happens at the synapse between two neurons?

Ans. At synapse, the electrical impulse generated a dendrite of a neuron is passed on to dendrite of another neuron in form of chemical impulses. The chemical present at synapse is called neurotransmier.

---

23. How do auxins promote the growth of a tendril around a support?

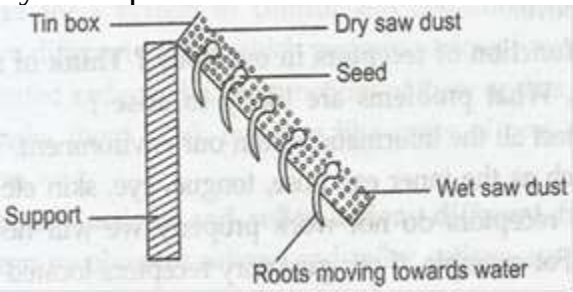
Ans. When tendrils come in contact of any support, the part of the tendril in contact does not grow as rapidly as the part away from the object due to auxin secreted moves away from the object in contact. This rapid growth on one side causes tendril to circle around the object.

---

24. Design an experiment to demonstrate hydrotropism.

Ans. Take a tin box with hole at bottom. Fill it with moist saw dust. Sow some gram seeds in it. Keep the tin box in tilted position. When seeds start germinating, water the saw dust only in lower side of the tin box. You will observe that the radicle move towards the wet saw dust. This shows that root is positively

hydrotropic.



---

25. How does our body respond when adrenaline is secreted into the blood?

Ans. When adrenaline reaches the various target organ through blood. All these organs respond together to enable our body to deal with situation like running away from scary situation. When adrenaline reaches the heart, it beats faster to supply more oxygen to our muscles. The small arteries around digestive system and skins contracts to divert the blood towards muscles. All these response enable our body to deal with situation.

---

26. Why are some patients of diabetes treated by giving injections of insulin?

Ans. Diabetes is caused due to non or less secretion of hormone insulin by pancreas. In such person, the blood sugar level is high. Insulin converts extra sugar present in blood into glycogen. Patients suffering from diabetes are given insulin injection to control their blood sugar level.

---

27. What is the function of receptors in our body? Think of situation where receptors do not work properly. What problems are likely to arise?

Ans. Receptors detect all the information from our environment. These receptors are located in our sense organs. In case any of the receptors do not work properly we will not be able to perceive that particular information.

---

28. How phototropism does occur in plants?

Ans. Movement of shoot towards light is called phototropism. This movement is caused due to more growth of cells towards the shaded side of the shoot as compared to the side of shoot towards light. More growth of cells is due to secretion of auxin towards the shaded side.

---

29. Which signals will get disrupted in case of a spinal cord injury?

Ans. (i) Reflex action

(ii) Impulses from various body parts will not conducted to brain.

(iii) Message from brain will not be conducted to various organs.

---

30. How does chemical coordination occurs in plants?

Ans. Chemical coordination in plants is maintained by plant hormones also known as phytohormones. Some of these hormones promote growth while some inhibit it. Some hormones include auxin, Gibberellins, Cytokinin etc.

---

31. What is the need for a system of control and coordination in an organism?

Ans. An organism has different organs which perform various factions. The survival of an organism depends on integrated and coordinated functions of these organs. Nervous and endocrine system of an organism makes them work together like parts of one machine to accomplish homeostasis or coordination.

---

32. How are involuntary actions and reflex actions different from each other?

Ans. Difference between involuntary and reflex actions is as follows:

Involuntary actions	Reflex actions
It is a set of muscles movement over which we do not have control. Such actions are controlled by brain. For example- contraction of muscle of our digestive tract, beating of heart etc.	It is rapid, spontaneous and involuntary activity that is produced in response to a stimulus. It is controlled by spinal cord. Example- removal of hand with jerk when someone touches a hot object.

---

33. Compare and contrast nervous system and hormonal control and coordination in animals.

Ans. Difference between nervous control and hormonal control:

Nervous control	Hormonal control
(i) Consists of nerve impulses conducted by neurons from one organ to another organ. (ii) Nervous impulses produce rapid short lasting responses. (iii) Nervous impulses are not specific in their action.	(i) It consists of endocrine system which scretes chemical messengers hormones secreted directly in blood. (ii) Hormones produce longer lasting responses. (iii)Action of hormones is highly Specific.

---

34. What is the difference between the manner in which movement's takes place in a sensitive plant and movement in our legs?

Ans. Difference between movement in a sensitive plant and movement in our legs:

Movement in sensitive plant	Movement in our legs
(i) There is no specialized tissue in plants for conduction of information.	(i) There is specialized nervous tissue in animals for conduction of information and muscle cells to help in movement.
(ii) Plant cells change shape by changing the amount of water in them.	(ii) Muscle cells contract or relax to effect movement.
(iii) Plant cells do not have specialized proteins.	(iii) Muscle cells have specialized protein which help muscles to contract or relax.

---

35. 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 are 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. In receiving these impulses, the muscles contract, and the hand is immediately removed from the hot plate.

---

36. How does the plant shoot bends, when the plant is placed in a room having only one open window?

Ans. When the plant is placed in such a room that has only one open window, the shoot of the plant bends towards the direction of light. Plant hormone axing is formed that diffuses towards the shady side of the shoot and stimulates the cells to live longer on the side of the shoot which is away from light. In this way the shoot bends towards the light.

---

37. Give a reason to explain why

(a) adrenaline helps in dealing emergency situations?

(b) secretions of growth hormone should be specific in the human body?

Ans. a. Adrenaline increases the heart beat and breathing rate which results in the supply of more oxygen to muscles. It reduces the blood to the digestive system and skin, as a result the blood is further diverted to skeletal muscles. All these responses together prepare the body to deal with the emergency situations.

b. If growth hormones is secreted in excess during childhood then it leads to gigantism while the less secretion of this hormone during childhood causes dwarfism.

---

38. A man becomes unconscious due to head injury. A pin is pricked on his foot, he withdraws his foot. Why? Explain.

Ans. It is reflex action. Stimulus is perceived by receptor (skin). Sensory nerve sends the sensation from receptor to the spinal cord. Then spinal cord sends the message through motor nerves to the effectors. Effectors i.e. muscles help in withdrawing his foot.

5 Mark Questions

1. Compare nervous and hormonal mechanism for control

Ans.

Nervous System	Hormonal System
Made of neurons	Made of secretory cells.
Messages transmitted in the form of electrical impulses	Message transmitted in the form of chemicals called hormones.
Messages transmitted along nerve fibres.	Messages transmitted through blood stream.
Messages travel very quickly.	Messages travel very slowly.
Effect of message usually lasts for a very short while	Effect of message usually lasts longer
Sense organs are receptors as nerve cells located in them receive information.	Glands are effectors which secrete hormones when as and when the brain commands.

---

2. Mention one function for each of these hormones.

i) Thyroxine

ii) Insulin

iii) Adrenaline

iv) Growth hormone

v) Testosterone.

Ans. (i) Thyroxin – Control overall metabolic rate of the body (carbohydrate, protein and fat metabolism)

(ii) Insulin – Conversion of glucose to glycogen in liver and muscles, thus decreases blood glucose level.

(iii) Adrenalin – increases heart beat, blood pressure and blood glucose level.

(iv) Growth hormone – Body growth and development of bones.

(v) Testosterone – Development of male sex organ sand secondary sex characteristics like moustache, beard & voice.

---

3. a) what are hormones?

b) list four characteristics of hormones

Ans. Hormones are chemical substances which are secreted in very less amount by specialized tissues called endocrine glands.

Characteristics of hormones are –

1) They are required in very less amount.

2) Hormones are specific in their function.

3) They act away from the site of production.

4) Deficiency or over secretions of hormones have negative effects in the body.

---

4. Design an experiment to demonstrate hydrotropism.

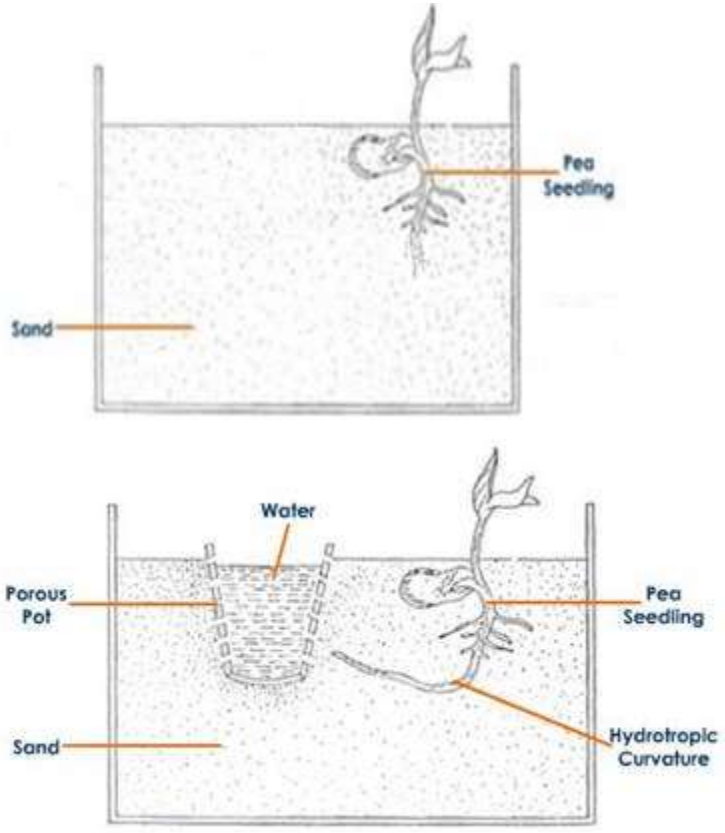
Ans. a) Take two glass troughs A and B and fill each one of them two – thirds with soil.

b) In troughs A plant a tiny seedling. In trough B plants a similar seedling and places a clay pot inside the soil.

c) Water the soil in trough A daily and uniformly. Do not water the soil in trough B but put some water in clay pot and leave both the trough for a few days.

d) Now, dig up the seedling carefully form both the troughs without damaging their roots. Observation – Roots of seedling in trough in A is straight. The root of

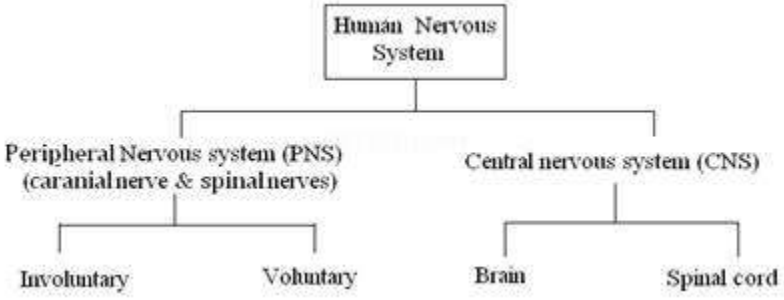
seedling in trough B is bent to the right side i.e., toward the clay pot containing water.



---

5. Describe Nervous system in humans.

Ans.



Flow chart of human nervous system

---

6. Draw the structure of a neuron and explain its function.

Ans. Neuron acquires particular information through dendrite located on its cell body. This information is then passed on to the axon. Finally, axon ending passes the information into next neuron at the synapse. As soon as the impulse reaches the dendrite, an electrical impulse is generated due to certain chemical changes in neuron. When the impulse reaches axon ending some chemicals released which pass on the impulse to next neuron. These chemicals are known as neurotransmitters.