

Sensation and responses

Que 1: The brain has a fluid which is formed from blood and reabsorbed into the blood.

(a) Identify the fluid.

(b) What are the functions of that fluid? Marks :(2)

Ans: a) Cerebrospinal fluid

b) Provides nutrients and oxygen to brain tissues, protects the brain from injuries

Que 2: The following are the indications of some diseases affecting the nervous system. Analyze the symptoms and tabulate in A and B columns by giving the name of the disease as heading. Marks :(4)

- Destruction of Ganglions.
- Destruction of neuron.
- Accumulation of an insoluble protein in the neural tissues.
- Decreased production of dopamine.
- Loss of body balance.
- Loss of memory.

A.....	B.....
<ul style="list-style-type: none">•••	<ul style="list-style-type: none">•••

Ans:

A) Parkinson's Disease	B) Alzheimer's Disease
Destruction of Ganglions.	Destruction of neuron.
Decreased production of dopamine.	Accumulation of an insoluble protein in the neural tissues.
Loss of body balance.	Loss of memory.

Que 3: Complete the table by placing the following statements suitably in the table given below

(i)Part of the Central nervous system

(ii)Part of the peripheral nervous system

(iii) Covered with meninges

(iv) All nerves from here are mixed nerves

(v) Cerebral ventricles are filled with CSF

(vi) Central canal is filled with CSF

(vii) Site of memory and imagination

Marks : (3)

Applicable to Brain only	Applicable to Spinal cord only	Applicable to both

Ans:

Applicable to brain only	Applicable to spinal cord only	Applicable to both
(v)	(iv)	(i)
(vii)	(vi)	(iii)

Que 4: Mention any three physiological activities retarded due to the action of Sympathetic system.

Marks : (3)

Ans:

- Production of saliva
- Gastric activities
- Intestinal peristalsis

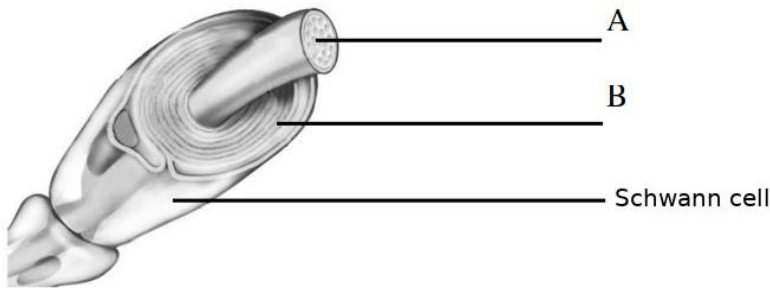
Que 5: Mention any three physiological activities came in to normal state by the action of Parasympathetic system

Marks : (3)

Ans:

- Heart beat
- Gastric activities
- Intestinal peristalsis

Que 6: Observe the illustration and answer the questions.



a) Identify A and B.

b) Write any two functions of B. Marks :(2)

Ans: a) A- axon, B - myelin sheath

b) provide nutrients and oxygen to the axon, accelerate impulses, act as an electric insulator and protect the axon from external shocks.

Que 7: Copy the diagram and label the parts according to the indicators given below.

a) The part consist of cerebrospinal fluid.

b) The part where myelinated nerve cells are present in abundance.

c) The part conduct motor impulses from spinal cord to other parts of the body. Marks :(3)

Ans: a) Central canal

b) White matter

c) Motor nerve

Que 8: Analyse the illustration and answer the questions.

Different parts of the body -----(A)----> Central nervous system -----(B)----> Different parts of the body.

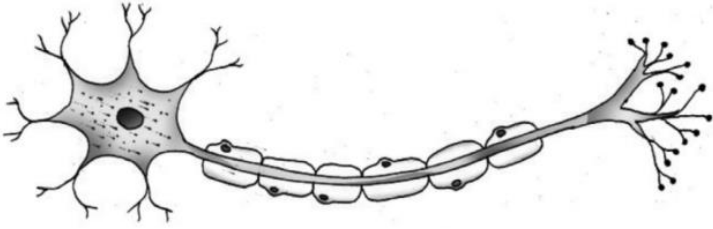
a) Identify the nerves indicated A and B.

b) Name the nerve that performs the functions of both nerves A and B. Marks :(2)

Ans: a) A- Sensory nerve B- Motor nerve

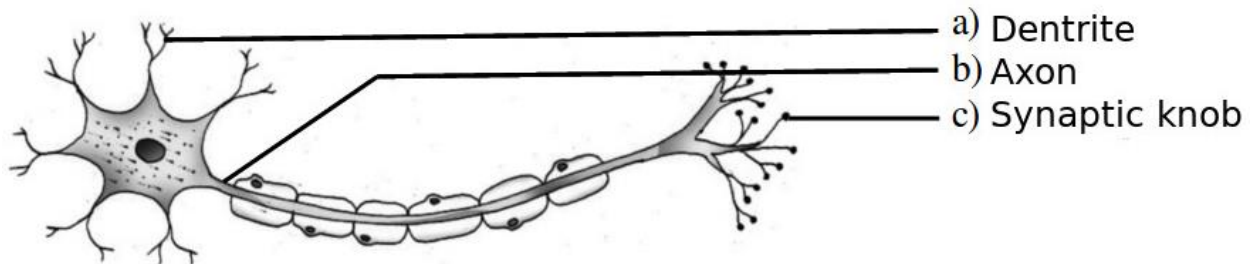
b) Mixed nerve

Que 9: Copy the diagram and label the parts according to the indicators given below.



- a) Part which receives impulses.
- b) Part which carries impulses to the cell body.
- c) Part which secretes neurotransmitters. **Marks :(4)**

Ans:



Copy diagram 1 score

Que 10: Analyse the given statements and answer the questions.

A- "The sympathetic system stimulates all physical activities".

B - " The sympathetic system stimulates some physical activity and reduces certain functions".

(a) Which statement do you agree with? Justify your answer. Marks :(2)

Ans: B - " The sympathetic system stimulates some physical activity and reduces certain functions".

Production of saliva decreases, Gastric activities slow down, Peristalsis in the intestine slows down.

Que 11: Some physical activity will change when you feared.

a) Identify the part of autonomous nervous system that regulates physical activity in this context.

b) What are the changes made by this system to the organs heart, liver, and salivary glands? Marks :(2)

Ans: a) Sympathetic system

b) Heart beat increases.

Glycogen is converted to glucose.

Production of saliva decreases.

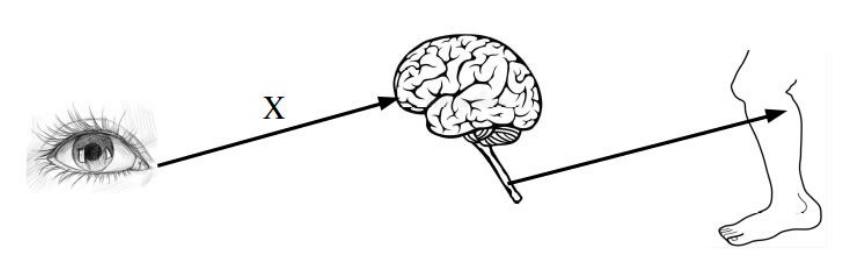
Que 12: "Synapse has a major role in controlling the direction of impulses "

Justify the statement citing appropriate evidence.

Marks :(2)

Ans: Neurotransmitters secrete from the synaptic knob to the synaptic cleft. So, impulse can travel only from a neuron's axonite to the dentrite of another neuron through synapse. For this reason, the Synapse has a major role in controlling the direction of impulse.

Que 13: Analyse the illustration and answer the questions.



a)Which nerve is labelled as " X " .

b)The nerve from the spinal cord, which reaches the muscle in the leg is mixed. Give reason .

a) " X " What kind of nerve is marked as?

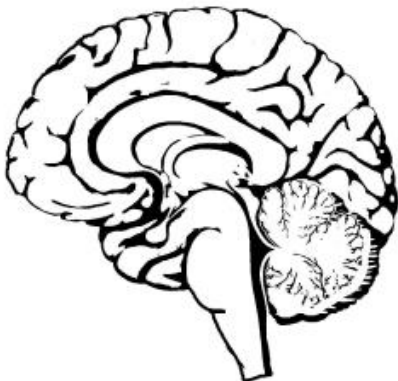
b) The nerve that travels from the spinal cord to the leg muscle is a composite nerve. Why?

Marks :(2)

Ans: a) X -sensory neuron

b) All spinal nerves are mixed nerves. This contains sensory nerve fibres and motor nerve fibres .

Que 14: Copy the diagram and label the parts based on the indicators given below.



- a) Part which coordinates muscular activities.
 b) Rod shaped structure seen below the cerebrum.
 c) Part which maintains homeostasis. *Marks :(4)*

Ans: Redraw 1 score

- a- Cerebellum
 b- Medulla oblongata
 c- Hypothalamus

Que 15: Some parts of the central nervous system is given in the box. Arrange them suitably in the box provided. *Marks :(3)*

Central canal, cerebrum, thalamus, hypothalamus, meninges, medulla oblongata.

Statement	Part
1. Part which controls involuntary actions.	1.
2. part which contain cerebrospinal fluid.	2.
3. Part which act as relay station of impulses.	3.
4. Largest part of the brain.	4.
5. Part which maintains homeostasis.	5.
6. Part which protects brain.	6.

Ans:

1. Medulla oblongata.
2. Central canal.
3. Thalamus
4. Cerebrum
5. Hypothalamas
6. Meninges

Que 16: The following are the indications of some diseases affecting the nervous system. Examine them and complete the table by giving the disease name as headings.

- Continuous and irregular flow of electric charges in the brain.
- Loss of body balance.

- Destruction of Ganglions.
- Loss of memory.
- Epilepsy due to continuous muscular contraction.
- Accumulation of an insoluble protein in the neural tissues. **Marks :(4)**

A.....	B.....	C.....
<ul style="list-style-type: none"> • Loss of body balance. • 	<ul style="list-style-type: none"> • • 	<ul style="list-style-type: none"> • Continuous and irregular flow of •

Ans:

A-parkinsons	B- Alshemers	C- Epilepsy
<ul style="list-style-type: none"> • Loss of body balance. • Destruction of gangleons. 	<ul style="list-style-type: none"> • Loss of memmory • Accumulation of an insoluble protein in the neural tissues. 	<ul style="list-style-type: none"> • Continuous and irregular flow of electric charges in the brain. • Epilepsy due to continuous muscular contraction. .

Que 17: The main symptoms of a disease affecting the nervous system are given below. Analyze the symptoms and answer the questions.

- Loss of body balance.
- Irregular movement of muscles.
- Profuse salivation.

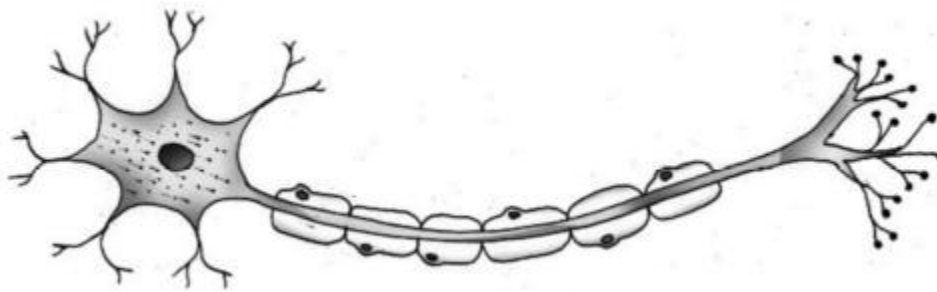
a) Identify the disease.

b) Write the causes of this disease. *Marks :(2)*

Ans: a) Parkinsons disease.

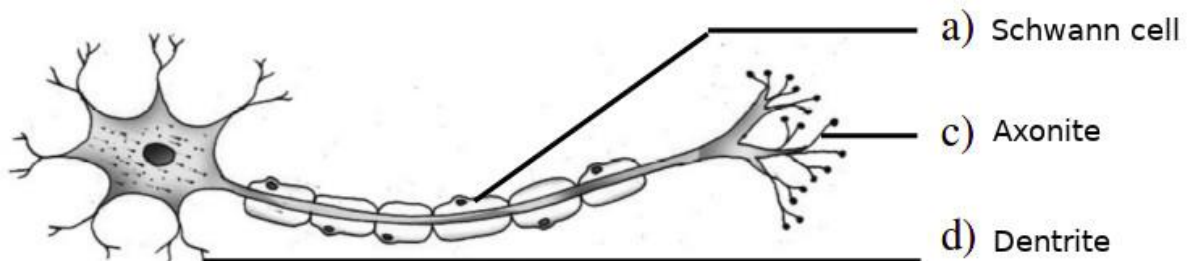
b) Distruction of specialised gangleons in the brain. Decrease in the production of the neurotransmitter, dopamine in the brain.

Que 18: Copy the diagram and select the parts of the neuron from the following. Write down the function that each of them performs. *Marks :(3)*



a) Schwann cell b) Dorsal root c) Axonite d) Dendrite e) Central canal

Ans:



a) Schwann cells-schwann cells form myelin sheath in nerves.

b) Axonite - carries impulses from axon to synaptic Knob/synapse.

c) Dendrite -receives impulses from adjacent neuron.

Que 19: Formation of impulses in a neuron is illustrated below.

Figure A

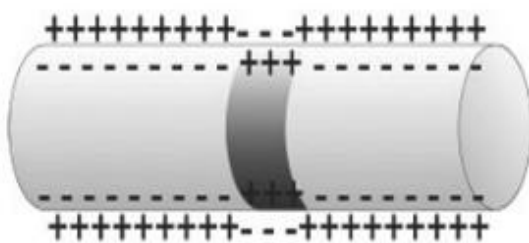
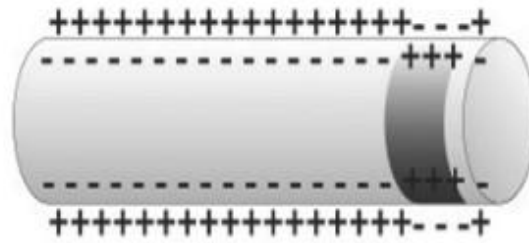


Figure B



a) Which factor in diagram A causes charge difference?

b) What difference can you observe in diagram B, when compared to diagram A.
Write the reason.

Marks :(3)

Ans: a) Stimulus

b) In diagram A, in the stimulated part the inner side of the membrane became positively charged and the outer side became negatively charged.

In diagram B, the momentary charge difference stimulates its adjacent parts and similar changes occur there too. As this process proceeds messages are transmitted through axon.

Que 20: “Impulses are formed due to the change in the distribution of ions on either side of the plasma membrane of a neuron” **Marks :(3)**

a) What changes occur to the charges on either side of the plasma membrane during impulse formation? Which factor causes this.?

b) How does charge difference transmits from one part of the neuron to the other?

Ans: a) outer side of the plasma membrane becomes positively charged and inner part becomes negatively charged. The difference in the charge on either side of the plasma membrane is due to stimulus.

b) Stimulus changes the equilibrium of ions on either side of the plasma membrane. So, at the stimulated part outer side of the membrane has negative charge and inner side has positive charge. This momentary charge difference stimulates its adjacent parts and similar changes occur there too. As this process proceeds messages are transmitted through axon.

Que 21: Analyse the statements given tin the box, Give the name of the layers as heading and complete the table. **Marks :(2)**

<ul style="list-style-type: none"> • Protects neuron from pressure, shock etc. • Increases the speed of impulses. • Acts as electric insulator. • Layer which protects spinal chord. • Contains three membranous layers. • Layer which covers and protects the brain
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.....
•	•
•	•
•	•

Ans:

Meninges	Myelin sheath
-Layer which covers and protects the brain.	-Protects neuron from pressure, shock etc.
-Layer which protects spinal chord.	-increases the speed of impulses.
- Contains three membranous layers.	-Acts as electric insulator.

Que 22: Identify the odd one and write the common feature of others.

Touch, Sound, Smell, Thirst

Marks :(1)

Ans: Thirst - Others are external stimuli

Que 23: Identify the word pair relation ship and fill the blanks.

Myelin sheath : Covers and protects axon.

..... : Covers and protects brain Marks :(1)

Ans: Meninges

Que 24: Find out the correct statements related to myelin sheath from those given below.

- a) Dendrons of all neurons are covered with myelin sheath .
- b) Myelin sheath in the nerves are made up of Schwann cells and that of brain and spinal cord is formed of oligodendrocytes.
- c) Myelin sheath has dark colour.
- d) Myelin sheath reduces the speed of impulses through axon. **Marks :(1)**

Ans: b) Myelin sheath in the nerves are made up of Schwann cells and that of brain and spinal cord is formed of oligodendrocytes.

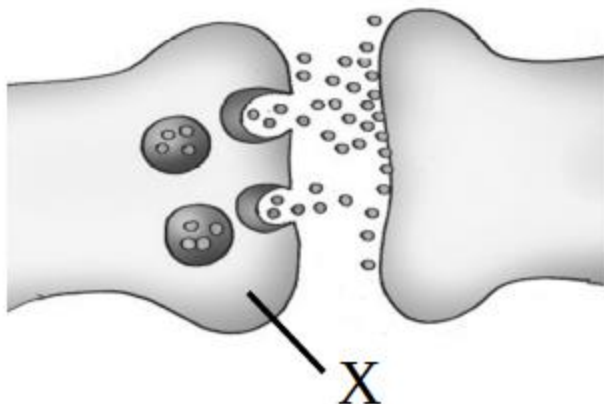
Que 25: Select the correct statement from the following related to myelin sheath.

- a) Myelin sheath covers the dendrons of all neurons.
- b) Schwann cells repeatedly encircle the axon to form Myelin sheath.
- c) Myelin sheath has shiny white colour.
- d) Myelin sheath decreases the speed of impulses through the axon. **Marks :(1)**

Ans: b) Schwann cells repeatedly encircle the axon to form Myelin sheath.

c) Myelin sheath has shiny white colour.

Que 26: Observe the following figure and answer the questions. Marks :(2)



a) Name the part indicated by 'X'.

b) Write the name of the chemical released by this part and its function.

Ans: a) X- Synaptic knob.

b) Acetyl choline/ Dopamine. This chemical which is released in the synaptic cleft stimulates the adjacent neuron and create electric impulses.

Que 27: A fluid fills the internal membranes of Meninges.

a) Identify the fluid?

b) Write any one function of this fluid. Marks :(2)

Ans: a) Cerebrospinal fluid.

b) Provides nutrients and oxygen to the tissues of the brain, regulate the pressure inside the brain and to protect the brain from injuries.

Que 28: Identify the parts of the nervous system with each of the following functions.

a) Plays a major role in the maintenance of homeostasis.

b) Acts as relay station of impulses Marks :(1)

Ans: a) Hypothalamus

b) Thalamus

Que 29: Analyse the following situations and complete the table.

i) Blinking of eye when light suddenly falls on the eye.

ii) Hand retract when accidentally touches a hot object. Marks :(2)

Under the control of the spinal cord	Under the control of the Cerebrum

Ans:

Under the control of the Spinal cord	Under the control of Cerebrum
Hand retract when accidentally touches a hot object	Blinking of eye when light suddenly falls on the eye.

Que 30: Analyse the following statements and write the reasons for each.

a) Cerebral cortex is called Grey matter.

b) The spinal nerves are mixed nerves.

Marks :(2)

Ans: a) The cell body and the nerve parts without myelin sheath form the cerebral cortex. So cerebral cortex is called Grey matter.

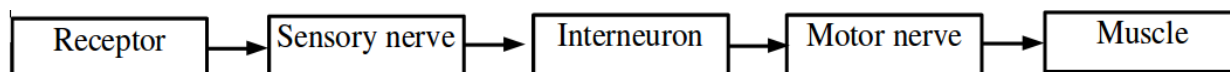
b) The spinal nerves are mixed nerves because they contain the sensory nerve fibres carrying impulses to spinal cord and motor nerve fibres carrying impulses to different body parts.

Que 31: Prepare a flow chart using the words given in the box related to reflex arc.

Marks :(2)

Motor neuron, receptor, muscle, interneuron, sensory nerve

Ans:



Que 32: Impulses transmit in the form of electrical charges. Find the evidence from the following that substantiate this statement.

a) The change in electrical charge in cell membrane becomes the impulse.

b) Impulses are the change in the difference in the distribution of ions seen in the cell membrane.

c) Ionic equilibrium forms the impulse.

Marks :(1)

Ans: a and b

Que 33: Synapses can regulate the direction of impulses. Select the statement which substantiates this fact.

Marks :(1)

a) Neurotransmitters are released in the synaptic cleft from the synaptic knob.

b) Neurotransmitters are released from one neuron to the next neuron.

c) Neurotransmitters are released into a neuron from the synaptic knob.

Ans: a) Neurotransmitters are released in the synaptic cleft from the synaptic knob.

Que 34: Find the correct statement related to Interneuron.

- a) Conveys messages to muscles.
- b) Conveys messages to spinal cord.
- c) Rapid responses are produced in relation to sensory impulses.
- d) Conveys impulses to receptors.

Marks :(1)

Ans: c) Makes rapid response suggestions based on sensory impulses.

Que 35: Analyse the statements A and B and identify the suitable explanation from the following.

Marks :(1)

Statement A- Alzheimer's disease is due to the destruction of neurons.

Statement B- Accumulation of an insoluble protein in the neural tissues of the brain of Alzheimer's patient occurs.

- i- Statements A and B are true and statement B is the cause of statement A.
- ii- Statements A and B are incorrect.
- iii- Statement A is correct and B is incorrect.
- iv- Statements A and B are true, but statement B is not the cause of statement A.

Ans: i- Statements A and B are true and statement B is the cause of statement A.

Que 36: The following table includes the parts of brain and their functions. Identify the correct pair from them.

Marks :(1)

Parts of brain	Function
1) Cerebrum	i) Relay of impulses
2) Thalamus	ii) Maintenance of body equilibrium
3) Cerebellum	iii) Heart beat
4) Medulla oblongata	iv) Maintenance of homeostasis
	v) Sensory experiences

- a) 1-i, 2-iii, 3-ii, 4-iv
- b) 1-v, 2-i, 3-iv, 4- iii
- c) 1-v, 2-ii, 3-ii, 4-i
- d) 1-v, 2-i, 3- ii, 4- iii

Ans: d) 1-v, 2-i, 3- ii, 4- iii

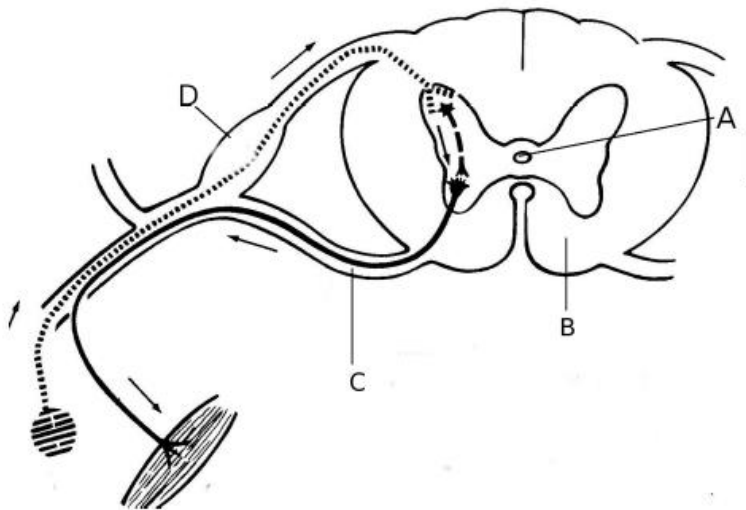
Que 37: The spinal nerves are made up of definite Dorsal and Ventral roots. Then, the ventral root is made up of:

Marks :(1)

- a) With sensory nerve fibres
- b) With motor nerve fibres
- c) With sensory and motor nerve fibres
- d) None of these.

Ans: b) With motor nerve fibres

Que 38: Select the correctly labelled one from the following. Marks :(2)



- i) A- White matter, B- Grey matter, C-Dorsal root, D- Ventral root
- ii) A- Central canal, B- Grey matter, C-Ventral root, D- Dorsal root
- iii) A- Central canal, B- White matter, C-Ventral root, D- Dorsal root
- iv) A- Central canal, B- Grey matter, C-Dorsal root, D- Ventral root

Ans: iii) A- Central canal, B- White matter, C-Ventral root, D- Dorsal root

Que 39: Which of the following indicates grey matter?

- a) The part where the cell body and axon of nerves are present.
- b) The part where the cell body and non-myelinated neurons are present.
- c) The part of the brain and the spinal cord, where myelinated neurons are present in abundance.
- d) The part where large amount of axons are present. Marks :(1)

Ans: b) The part where the cell body and non-myelinated neurons are present.

Que 40: Identify the correct flow chart related to reflex arc. Marks :(1)

- a) Receptor--> motor nerve --> Sensory nerve --> Muscle --> Interneuron
- b) Receptor --> motor nerve --> Sensore nerve --> Interneuron --> Muscle

c) Receptor --> Sensory Nerve --> Interneuron --> Motor neuron --> Muscle

d) Receptor --> Motor nerve --> Interneuron --> Sensory Nerve --> Muscle

Ans: c) Receptor --> Sensory Nerve --> Interneuron --> Motor neuron --> Muscle

Que 41: Analyse the table and rearrange the parts according to the features.

Marks :(3)

Part	Feature
White matter	Sensory impulses reach the spinal cord
Central canal	Nerve parts without Myelin sheath are seen
Dorsal root	Nerve parts with Myelin sheath are seen
Grey matter	Carries cerebrospinal fluid

Ans:

Part	Function
Central Canal	Carries cerebrospinal fluid
Dorsal Root	Sensory impulses reach the spinal cord
White matter	Nerve parts with Myelin sheath are seen
Grey matter	Nerve parts without Myelin sheath are seen

Que 42: Identify the parts perform the following functions.

a) Coordinates the rapid and repeated during walking, running etc.

b) Coordinates muscular activities and maintains equilibrium of the body.

c) Secretes neurotransmitters to synaptic cleft.

d) Maintains homeostasis.

Marks :(3)

Ans: a) spinal cord

b) cerebellum

c) synaptic knob

d) Hypothalamus

Que 43: Which of the following statements are correct in connection with the transmission of impulse through synapse ?

Marks :(1)

- a) Transmits from the cell body of one neuron to the cell body of adjacent neuron.
- b) Transmits from the synaptic knob of one neuron to the dendrite of adjacent neuron.
- c) Transmits from the synaptic knob of one neuron to the axonite of adjacent neuron.
- d) Transmits from the dendrite of one neuron to the axonite of adjacent neuron.

Ans: b) Transmits from the synaptic knob of one neuron to the dendrite of adjacent neuron.

Que 44: Which of the following indicates white matter?

- a) The part where the cell body and axon of nerves are present.
- b) The part where the cell body and non myelinated neurons are present.
- c) The part of the brain and the spinal cord, where myelinated neurons are present in abundance.
- d) The part where large amount of axons are present. *Marks :(1)*

Ans: c) The part of the brain and the spinal cord, where myelinated neurons are present in abundance.