



# THIRUVANANTHAPURAM EDUCATIONAL DISTRICT

WS2BY10.1

## STANDARD X BIOLOGY

### UNIT-1 (Answerkey)

#### 1. Analyse the conversation and answer the questions.

##### 1. What are stimuli?

The senses that evoke responses in an organism are called stimuli.

##### 2. Name the two types of stimuli. Give examples.

External stimuli eg. Heat, cold, touch, sound

Internal stimuli eg. Hunger, Thirst, Variation in blood pressure, Change in water content, Sense for emptying the bladder, Change in CO<sub>2</sub> level, Microbial infection

##### 3. What are receptors?

Receptors are specialized cells in the sense organs and other parts of the body to receive stimuli.

#### 2. Identify the diagram, redraw it, label the parts and insert the parts in the table so that it matches with the functions.

##### a. Neuron

##### b. copy the diagram

##### c. A-dendrite, B-Dendron, C-Axon, D-Axonite, E-Synaptic knob

| PART            | FUNCTION  |
|-----------------|---|
| Dendron         | Carries impulses to the cell body.              |
| <u>Dendrite</u> | Receives impulses from adjacent neuron.         |
| Synaptic knob   | Secretes neurotransmitter.                      |
| Axonite         | Carries impulses to the synaptic knob.          |
| Axon            | Carries impulses from the cell body to outside. |

#### 3. Analyse the diagram and answer the questions.

##### a. A- Schwann cell, B-Oligodendrocyte

b. Myelin sheath in the brain and the spinal cord is formed of oligodendrocytes and Myelin sheath in the nerves is formed of Schwann cells.

##### c.

- It provides necessary nutrients and oxygen to the axon
- It accelerate impulses along the axon
- It acts as an electric insulator

- It protects the axon from external shocks.

**d . White matter**

The part of brain and the spinal cord, where myelinated nerve cells are present in abundance is called white matter. The part looks like shiny white in colour.

**Grey matter.**

The part where non-myelinated nerve cells are present is called grey matter. The part looks like greyish in colour.

**4. Given below are two statements from Gitu’s science diary. Help her to complete the activity given in Biology class.**

**A)The difference in the distribution of ions helps to maintain positive charge on the outer surface and negative charge inside the plasma membrane of the neuron**

**B)When stimulated, ionic equilibrium in the particular part changes, and the outer surface of the plasma membrane of axon becomes negatively charged while the inner surface becomes positively charged. As a result impulse is generated.**

**C)The momentary charge difference in the axon membrane stimulates its adjacent parts and similar changes occur there too. As this process continues, impulses get transmitted through axon**

**5. Observe the diagram and answer the questions.**

**a. Synapse.**

**b. A- Synaptic knob, B- Dendrite, C- neurotransmitter, D-Synaptic cleft**

**c. Dopamine and Acetylcholine**

**d. When the impulses reach synaptic knob certain chemicals called neurotransmitters are released which stimulate the dendrite of adjacent neurons and the impulses are again transmitted as electric impulses. Hence impulse can travel only from A(synaptic knob) to B(dendrite).**

**6.**

| <b>A Nerve</b>                 | <b>Peculiarities</b>                                | <b>Functions</b>  |
|--------------------------------|---|---|
| <b>B<br/>Sensory<br/>nerve</b> | <b>C<br/>formed of<br/>sensory nerve<br/>fibres</b> | <b>Carries impulses from various parts of the body to the brain and spinal cord</b> |

|                                |  |  |
|--------------------------------|--|--|
| <b>D</b><br><b>Motor nerve</b> | <b>Formed of motor nerve fibres</b>                                      | <b>E</b><br><b>carries impulses from brain and spinal cord to various parts of the body.</b> |
| <b>F</b><br><b>Mixed nerve</b> | <b>G</b><br><b>formed of sensory nerve fibres and motor nerve fibres</b> | <b>Carries impulses to and from the brain and spinal cord.</b>                               |

7.

- A. Peripheral nervous system
- B. Brain
- C. Cranial nerves
- D. 31 pairs.

8.

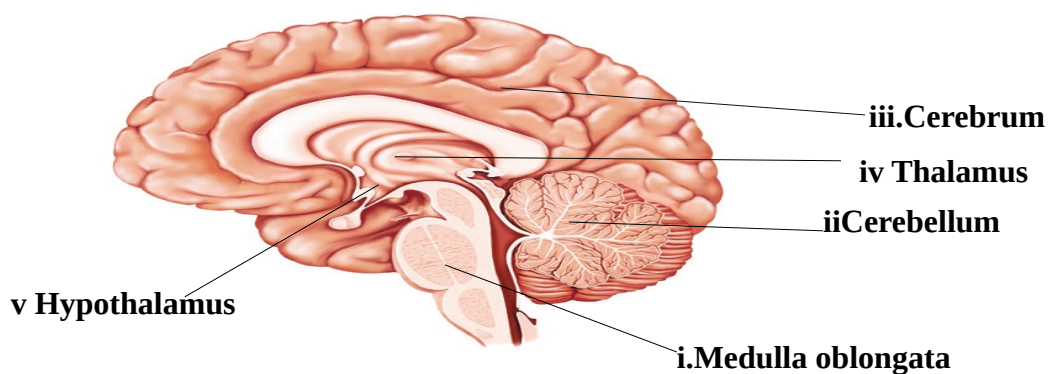
a. The brain is protected inside the skull. It is covered by the meninges, a three-layered membrane. The cerebrospinal fluid which is filled within the inner membranes of meninges and the ventricles of the brain helps to protect the brain from injuries.

b.

The other functions of the cerebrospinal fluid are to provide nutrients and oxygen to the tissues of the brain, regulate the pressure inside the brain.

9.

a. copy the diagram



10.

a.

- i. Dorsal root
- ii. Ventral root

- iii. Central canal.
- iv. Grey matter

**b. protection of spinalcord**

The spinal cord is protected inside the vertebral column. The spinal cord is also covered by meninges. The central canal seen in the centre of the spinal cord is also filled with cerebrospinal fluid that protect spinal cord from injuries .

**function of spinalcord**

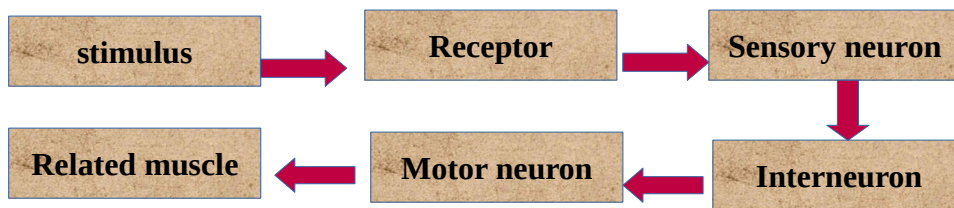
Impulses from different parts of the body are transmitted to and from the brain through the spinal cord. It also coordinates the repeated movements during walking, running etc.

11.

**a. Reflex action.**

**b. Reflex arc.**

**Complete the flowchart**



**c.ii. We blink our eyes when light suddenly falls on it-Cerebral reflex**

**12.i. Autonomous nervous system.**

**ii.**

| Sympathetic nervous system              | Parasympathetic nervous system.  |
|---|----------------------------------|
| The pupil in the eye dilates            | Production of saliva increases.  |
| Heart beat increases                    | Gastric activities become normal |
| Peristalsis in the intestine slows down | Glucose is converted to glycogen |

**13. A. Accumulation of an insoluble protein in the neural tissues of the brain.**

Neurons get destroyed.

**B. Parkinsons**

**C. Loss of body balance,irregular movement of muscles,shivering of the body,Profuse salivation.**

**D. Continuous and irregular flow of electric charges in the brain.**

**E. Epilepsy due to continuous muscular contraction,frothy discharge from the mouth,clenching of the teeth following which the patient falls unconscious.**