12.1 COORDINATION AND RESPONSE
KOORDINASI DAN GERAK BALAS

Objective Questions
Soalan Objektif

1 Which of the following is the **correct** flow of information when a person accidentally cut his finger?

*Antara berikut, laluan maklumat yang manakah **betul** apabila seseorang terhiris jarinya tanpa sengaja?*

A Afferent neurone → receptor →spinal cord → efferent neurone → effector
Neuron aferen → reseptor → saraf tunjang → neuron eferen → efektor

B Receptor → efferent neurone →spinal cord → afferent neurone → effector
Reseptor → neuron eferen → saraf tunjang → neuron aferen → efektor

C Efferent neurone → effector →spinal cord → afferent neurone → receptor
Neuron eferen → efektor → saraf tunjang → neuron aferen → efektor

D Receptor → afferent neurone →spinal cord → efferent neurone → effector
Reseptor → neuron aferen → saraf tunjang → neuron eferen → efektor

2 What is the meaning of stimulus?

Apakah maksud rangsangan?

A The ability to respond to any changes in the environment
Keupayaan untuk bergerak balas terhadap sebarang perubahan di persekitaran

B Changes in the environment that makes organisms react
Sebarang perubahan pada persekitaran yang membuatkan organisma bergerak balas

C The movement of body towards any changes
Pergerakan badan terhadap sebarang perubahan

D The system that receives information from receptor
Suatu sistem yang menerima maklumat daripada reseptor

3 Which of the following is **correctly** matched?

*Antara berikut, manakah padanan yang **tepat**?*

	Sensory receptor ***Reseptor deria***	**Function** ***Fungsi***
A	Chemoreceptor *Kemoreseptor*	Detects biological substances *Mengesan bahan biologi*
B	Mechanoreceptor *Mekanoreseptor*	Detects changes in temperature *Mengesan perubahan suhu*
C	Photoreceptor *Fotoreseptor*	Detects presence of light *Mengesan kehadiran cahaya*
D	Thermoreceptor *Termoreseptor*	Detects changes in blood pressure *Mengesan perubahan tekanan darah*

LIVEWORKSHEETS

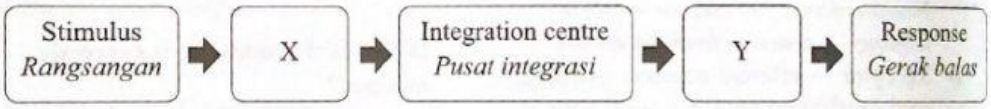
Structured Questions
Soalan Struktur

1 Give a definition of the following words.
Berikan definisi bagi perkataan-perkataan berikut.

(a) Coordination
Koordinasi

(b) Stimulus
Rangsangan

2 Diagram below shows a flow chart that shows the pathway of nerve impulse.
Rajah di bawah menunjukkan carta alir yang menunjukkan aliran impuls saraf.



(a) State the structures found in X and Y.
Nyatakan struktur pada X dan Y.

(b) Describe the functions of structures X and Y in the pathway above.
Huraikan mengenai fungsi struktur X dan Y dalam aliran di atas.

(c) What are the examples of external and internal stimuli?
Apakah contoh bagi rangsangan luar dan rangsangan dalam?

(i) External stimuli :
Rangsangan luar

(ii) Internal stimuli:
Rangsangan dalam

LIVEWORKSHEETS

3 Match the type of sensory receptor with its correct description.
Padan setiap reseptor deria dengan huraian yang betul.

(a) Mechanoreceptor *Mekanoreseptor*	Stimulated by light energy *Dirangsang oleh tenaga cahaya*	J
(b) Baroreceptor *Baroreseptor*	Stimulated by changes in temperature *Dirangsang oleh perubahan suhu*	K
(c) Photoreceptor *Fotoreseptor*	Stimulated by changes in chemical concentration *Dirangsang oleh perubahan kepekatan bahan kimia*	L
(d) Thermoreceptor *Termoreseptor*	Stimulated by changes in blood pressure *Dirangsang oleh perubahan tekanan darah*	M
(e) Chemoreceptor *Kemoreseptor*	Stimulated by changes in pressure *Dirangsang oleh perubahan pada tekanan*	N

4 Fill in the correct stimulus and response.
Isikan dengan rangsangan dan gerak balas yang betul.

Situation ***Situasi***	**Stimulus** ***Rangsangan***	**Response** ***Gerak balas***
Hearing a door bell *Mendengar loceng pintu*		
Body temperature rises due to an infection *Suhu badan meningkat disebabkan jangkitan*		

5 List the importance of responding to stimuli for living organisms.
Senaraikan kepentingan bergerak balas terhadap rangsangan bagi organisma hidup.

(a) _____

(b) _____

(c) _____

(d) _____

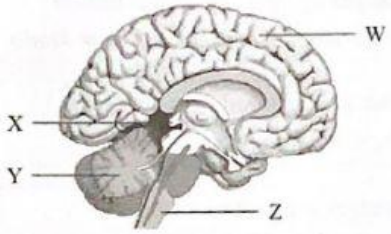
LIVEWORKSHEETS

12.2 NERVOUS SYSTEM
SISTEM SARAF

Objective Questions
Soalan Objektif

1 Diagram below shows a section of the human brain.

Rajah di bawah menunjukkan keratan otak manusia.



Which of the labelled parts control the body movement and control the blood pressure?

Bahagian berlabel yang manakah mengawal pergerakan badan dan mengawal tekanan darah?

	Control of body movement *Mengawal pergerakan badan*	Control of blood pressure *Mengawal tekanan darah*
A	W	Y
B	X	W
C	Z	X
D	Y	Z

2 A student raised her hand and answered the question asked by the teacher in class. Which part of the brain controls the student's response?

Seorang pelajar mengangkat tangan dan menjawab soalan yang ditanya oleh guru di dalam kelas. Bahagian otak yang manakah mengawal gerak balas pelajar tersebut?

A Cerebrum
Serebrum

B Cerebellum
Serebelum

C Spinal cord
Saraf tunjang

D Medulla oblongata
Medula oblongata

3 A man was involved in a road accident. The accident caused injury to his brain and affected his ability to speak. Which part of his brain is affected?

Seorang lelaki mengalami kemalangan jalanraya. Kemalangan itu menyebabkan kecederaan kepada otak dan menjejaskan kebolehannya untuk bertutur. Bahagian otak yang manakah tercedera?

A Cerebrum
Serebrum

B Thalamus
Talamus

C Cerebellum
Serebelum

D Spinal cord
Saraf tunjang

4 What are the components of the autonomic nervous system?

Apakah komponen-komponen dalam sistem saraf autonomi?

A Peripheral and somatic nervous systems
Sistem saraf periferi dan sistem saraf soma

B Central and peripheral nervous systems
Sistem saraf pusat dan sistem saraf periferi

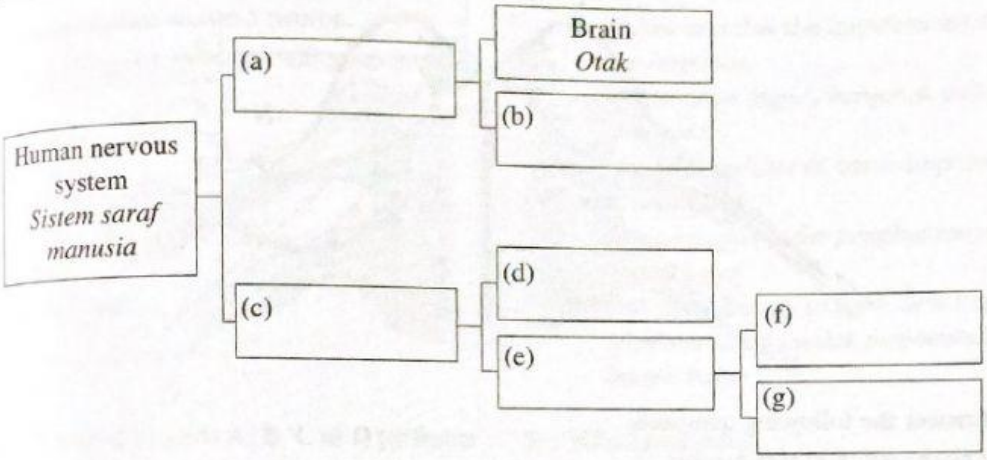
C Somatic and sympathetic nervous systems
Sistem saraf soma dan sistem saraf simpatetik

D Sympathetic and parasympathetic nervous systems
Sistem saraf simpatetik dan sistem saraf parasimpatetik

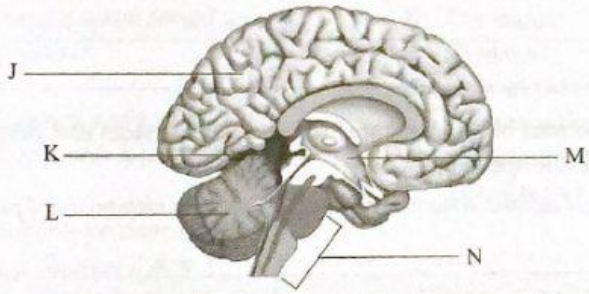
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Structured Questions
Soalan Struktur

1 Complete the organisation chart of the nervous system.
Lengkapkan carta organisasi bagi sistem saraf.



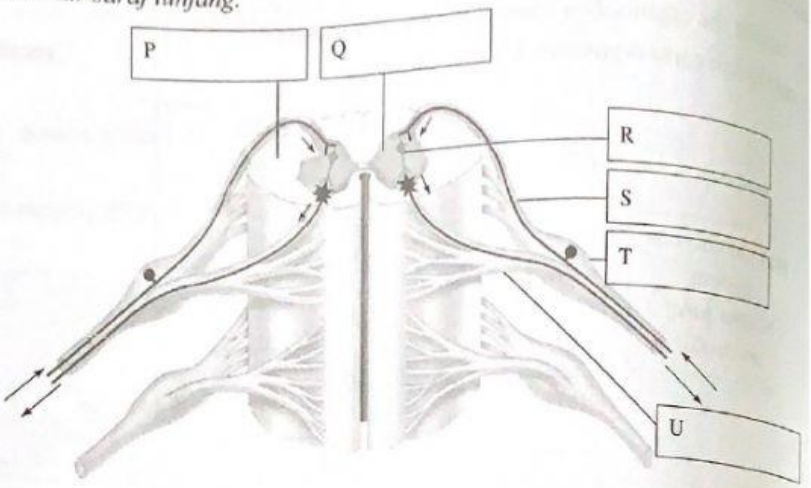
2 Name and state the main functions of each part of the human brain below.
Nama dan nyatakan fungsi utama bagi setiap bahagian dalam otak manusia di bawah.



	Part of brain *Bahagian otak*	Function *Fungsi*
J		
K		
L		
M		
N		

LIVEWORKSHEETS

3 Label the structure of spinal cord.
Labelkan struktur saraf tunjang.



4 Answer the following questions.
Jawab soalan-soalan berikut.

(a) State the main function of autonomic nervous system.
Nyatakan fungsi utama sistem saraf autonomi.

(b) Compare the functions between sympathetic nervous system and parasympathetic nervous system in the space below.
Bandingkan fungsi antara sistem saraf simpatetik dan sistem saraf parasimpatetik dalam ruang di bawah.

Sympathetic nervous system *Sistem saraf simpatetik*	**Parasympathetic nervous system** *Sistem saraf parasimpatetik*

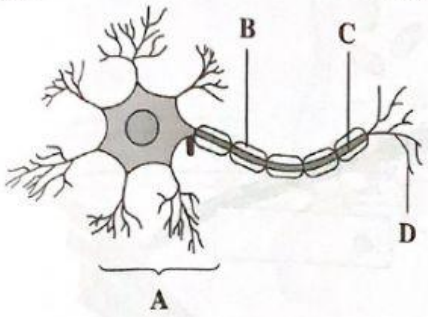
(c) The parasympathetic nervous system is referred to as the "rest and digest" response. Explain this statement.
Sistem saraf parasimpatetik dirujuk sebagai gerak balas "rehat dan cerna". Terangkan pernyataan ini.

LIVEWORKSHEETS

12.3 NEURONES AND SYNAPSE
NEURON DAN SINAPS

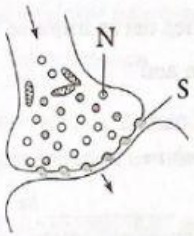
Objective Questions
Soalan Objektif

1 Diagram below shows a neuron.
Rajah di bawah menunjukkan suatu neuron.



Which labelled parts **A**, **B**, **C** or **D** performs basic cellular function, such as protein synthesis?
*Antara bahagian berlabel **A**, **B**, **C** dan **D**, yang manakah menjalankan fungsi asas sel seperti sintesis protein?*

2 Diagram below shows a synapse in axon terminal. Question 2 and 3 are based on this diagram.
Rajah di bawah menunjukkan sinaps di terminal akson. Soalan 2 dan 3 berpandukan rajah tersebut.



What is the function of substance N?
Apakah fungsi bahan N?

A Releases the neurotransmitter
Membebaskan neurotransmiter

B Makes sure that the impulses move in one direction
Memastikan impuls bergerak dalam satu hala

C Increases the rate of nerve impulse transmission
Mempercepat kadar penghantaran impuls saraf

D Generates energy to form new impulse
Menjana tenaga untuk pembentukan impuls baharu

3 What is substance S?
Apakah bahan S?

A Adrenaline
Adrenalina

B Thyroxine
Tiroksina

C Noradrenaline
Noradrenalina

D Mitochondria
Mitokondria

4 Which term is used to describe the space between a neuron and its target cell?
Apakah perkataan yang digunakan untuk menjelaskan ruang di antara neuron dan sel sasaran?

A Axon terminal
Terminal akson

B Synaptic cleft
Ruang sinaps

C Synaptic knob
Bonggol sinaps

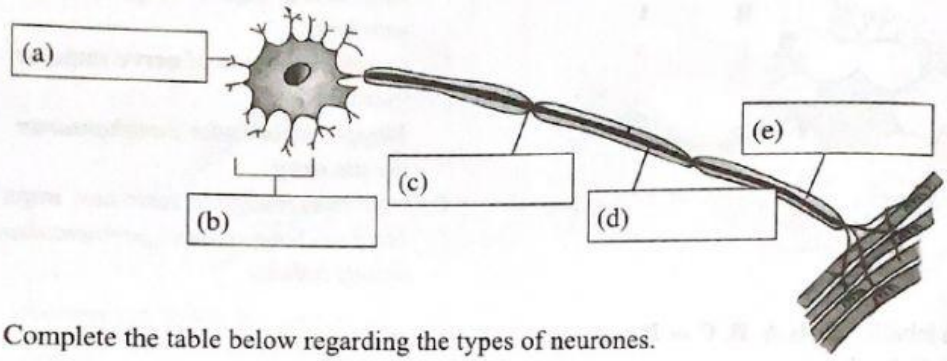
D Nodes of Ranvier
Nodus Ranvier

LIVEWORKSHEETS

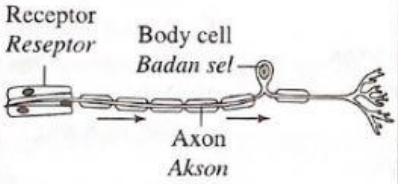
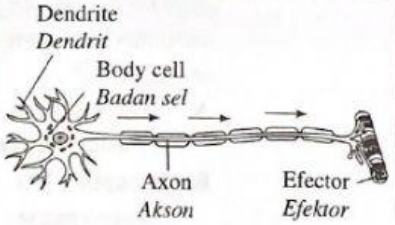
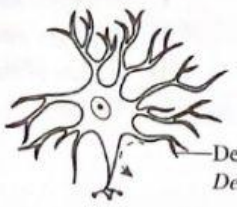
Structured Questions
Soalan Struktur

1 The brain and nervous system are made of billions of nerve cells called neurons.
Otak dan sistem saraf terdiri daripada berbilion-billion sel saraf yang dikenali sebagai neuron.

Label the parts in the neuron below.
Labelkan bahagian pada neuron di bawah.

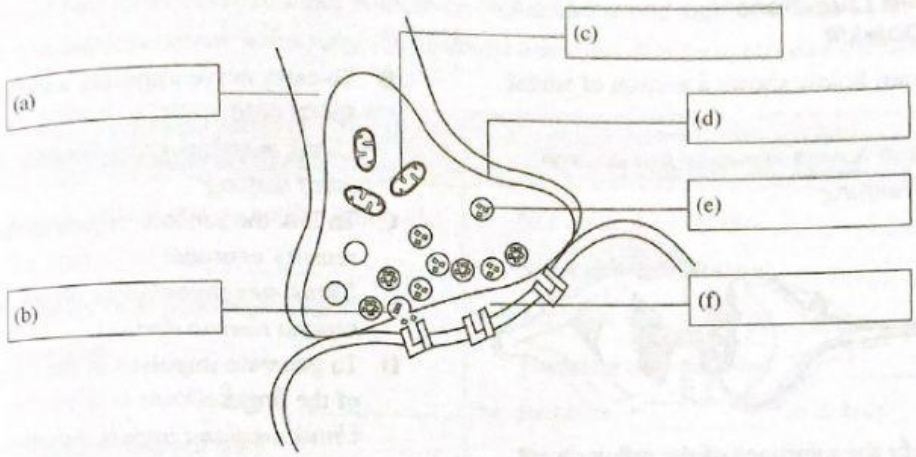


2 Complete the table below regarding the types of neurones.
Lengkapkan jadual di bawah mengenai jenis-jenis neuron.

Types of neurone *Jenis neuron*	**Diagrams** *Rajah*	**Functions** *Fungsi*
(a) Sensory or afferent neuron *Neuron deria atau neuron aferen*		Carries nerve impulses from the _____ to the _____ and spinal cord. *Membawa impuls saraf dari _____ ke _____ dan saraf tunjang.*
(b) Motor or efferent neuron *Neuron motor atau neuron eferen*		Carries nerve impulse from the brain and _____ to the _____. *Membawa impuls saraf dari otak dan _____ ke _____.*
(c) Interneurone *Interneuron*		Carries nerve impulses from an _____ neuron to an _____ neuron. *Membawa impuls saraf dari neuron _____ ke neuron _____.*

LIVEWORKSHEETS

3 Name each part of the synapse shown below.
Namakan setiap bahagian dalam sinaps yang ditunjukkan di bawah.



4 Discuss how the impulses are generated and move across the synapse based on the diagram above.
Bincangkan bagaimanakah impuls dijana dan bergerak merentasi sinaps berdasarkan rajah di atas.

(a) When the nerve impulse arrives at the _____ , the _____ releases the _____ into the synapse.

Apabila saraf impuls tiba di _____ , _____ *akan membebaskan* _____ *ke dalam sinaps.*

(b) The neurotransmitter molecules _____ across the synapse to the _____ of another neurone.

Molekul-molekul neurotransmitter _____ *merentasi sinaps ke* _____ *neuron bersebelahan.*

(c) The dendrite is stimulated to trigger a new nerve _____ which travels down along the _____ .

Dendrit dirangsangkan untuk menghasilkan saraf _____ *baharu yang bergerak di sepanjang* _____ .

LIVEWORKSHEETS