PBD

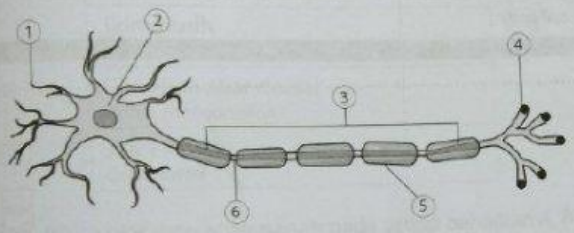
12.3 Neuron dan Sinaps
Neurones and Synapse

Buku Teks ms. 223 – 226

1. Rajah di bawah menunjukkan satu neuron motor. Labelkan neuron dan lukis anak panah untuk menunjukkan arah impuls saraf sepanjang neuron. SP 12.3.1, 12.3.2 TP1

The diagram below shows a motor neurone. Label the neurone and draw arrow to show the direction of nerve impulse along the neurone.

Akson / *Axon*	Bonggol sinaps / *Synaptic knob*	Badan sel / *Cell body*
Dendrit / *Dendrite*	Salut mielin / *Myelin sheath*	Nodus Ranvier / *Nodes of Ranvier*



① _____

② _____

③ _____

④ _____

⑤ _____

⑥ _____

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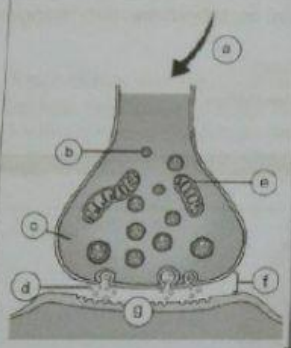
2. Isi kotak kosong dengan struktur neuron yang betul berdasarkan fungsi yang diberikan.
Fill in the boxes with the correct structure of neurones based on the functions given. SP 12.3.3 TP2

Fungsi neuron/ *Function of neurone*	
(a) Membebaskan neurotransmiter *Releases neurotransmitters*	
(b) Menghantar impuls ke badan sel *Conducts impulses toward the cell body*	
(c) Meningkatkan kelajuan penghantaran impuls *Increases the speed of impulse transmission*	
(d) Lokasi nukleus *Location of the nucleus*	
(e) Membawa impuls keluar dari badan sel *Conducts impulses away from the cell body*	

Struktur/ *Structure*
A : Akson *Axon*
B : Bonggol sinaps *Synaptic knob*
C : Dendrit *Dendrite*
D : Salut mielin *Myelin sheath*
E : Badan sel *Cell body*

3. Labelkan rajah di bawah untuk menunjukkan proses penghantaran impuls merentasi sinaps.
Label the diagram below to show the process of impulse transmission across a synapse. SP 12.3.3 SP 12.3.4 TP3 KBAT Mengaplikasi



Penghantaran impuls
Transmission of nerve impulses

ⓐ _____ sampai di neuron / _____ *arrives in neurone*

ⓑ _____ mengandungi neurotransmiter.
_____ *contains neurotransmitters.*

ⓒ _____

ⓓ _____ dibebaskan ke dalam sinaps
_____ *are released into the synapse.*

ⓔ _____ menjana tenaga / _____ *generate energy*

ⓕ _____

ⓖ Neurotransmiter bergabung dengan reseptor di _____
_____ dan mencetuskan impuls baharu.
Neurotransmitters bind to the receptors of _____ *and initiate new impulses.*

Kuasai SPM 12.3

Kertas 1

Antara yang berikut, yang manakah betul menunjukkan arah penghantaran impuls di neuron deria?
Which of the following is the correct direction of impulse transmission in a sensory neurone?

A Akson → badan sel → dendrit / *Axon → cell body → dendrites*
B Akson → dendrit → badan sel / *Axon → dendrites → cell body*
C Dendrit → badan sel → akson / *Dendrites → cell body → axon*
D Dendrit → akson → badan sel / *Dendrites → axon → cell body*

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12.4 Tindakan Terkawal dan Tindakan Luar Kawal
Voluntary and Involuntary Actions

Buku Teks ms. 226 – 229

1. Kaji situasi di bawah. / *Study the following situation.* SP 12.4.1 TP4 KBAT Menganalisis

Ali memasuki bilik yang gelap lalu menghidupkan lampu. Iris mata Ali bergerak balas dengan mengubah saiz anak mata supaya dia dapat melihat warna baju di dalam bilik. Debu di udara menyebabkannya bersin. Tiba-tiba pintu tertutup, menyebabkan denyutan jantung Ali semakin cepat. Ali berlari ke pintu dan memegang tombol pintu.

Ali entered a very dark room. He switched on the light. His irises responded by changing the pupil size so that he could see colours of shirts in the room. Dust in the air made him sneeze. Suddenly the door slammed shut, causing his heartbeat to speed up. He ran to the door and he grabbed the door handle.

Nyatakan tindakan terkawal dan tindakan luar kawal dalam situasi di atas.
State the voluntary actions and involuntary actions in the above situation.

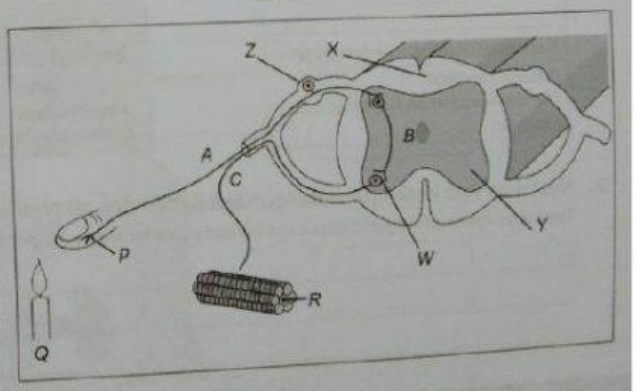
Tindakan terkawal/ ***Voluntary actions***	**Tindakan luar kawal/** ***Involuntary actions***

2. Rajah di bawah menunjukkan arka refleks. / *The diagram below shows a reflex arc.* SP 12.4.2 TP1

(a) Lengkapkan jadual di bawah untuk mengenal pasti struktur berlabel dalam rajah tersebut.
Complete the table below to identify the labelled structures in the diagram.

Neuron deria *Sensory neurone*	
Neuron geganti *Relay neurone*	
Neuron motor *Motor neurone*	
Sinaps *Synapse*	
Stimulus *Rangsangan*	
Reseptor di kulit *Receptors in the skin*	
Efektor (otot di lengan) *Effector (muscle in the arm)*	
Jirim putih *White matter*	
Ganglion akar dorsal *Dorsal root ganglion*	
Jirim kelabu *Grey matter*	

INFO **Arka Refleks**
Reflex Arc



(b) Lukis satu anak panah pada setiap bahagian *A*, *B* dan *C* untuk menunjukkan arah pergerakan impuls saraf.
Draw one arrow on each of parts A, B and C to show the direction in which a nerve impulse travels.

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