KOLEKSI SOALAN SPM PERCUBAAN NEGERI
FORM 5 BIOLOGY CHAPTER 3: COORDINATION AND RESPONSE

QUESTION 1 - 2014 KEDAH MODUL 1

Diagram 5.1 shows the structure of a nephron in the human kidney.*Rajah 5.1 menunjukkan struktur satu nefron dalam ginjal manusia.*

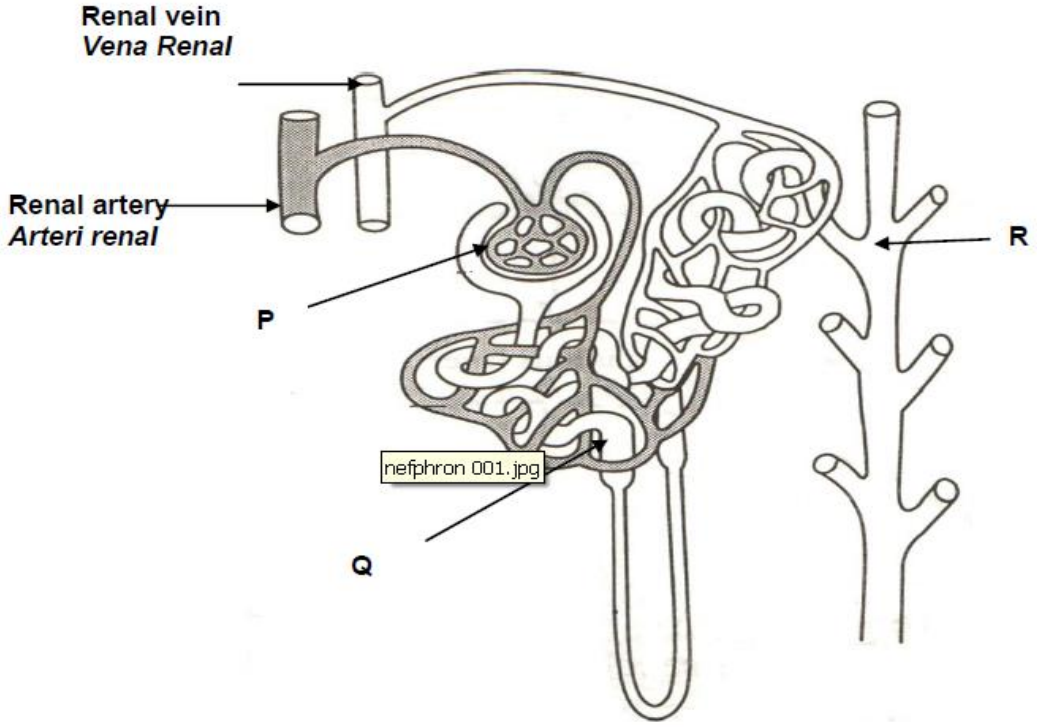


Diagram 5.1
Rajah 5.1

(a)(i) Name the process that occurs at P.
Namakan proses yang berlaku pada P.

_____
_____

[1 mark]

(ii) Explain how the process occurs at P.
Terangkan bagaimana proses ini berlaku pada P.

_____
_____
_____
_____

[2 marks]

(b) Explain one difference between the contents of Q and R.
Terangkan satu perbezaan antara kandungan Q dan R.

_____
_____

[2 marks]

(c) (i) Name the hormone that controls the permeability of the nephron to water.
Namakan hormon yang mengawal ketelapan nefron terhadap air.

_____
_____

[1 mark]

(ii) Explain how the hormone named in (d)(i) is responsible in osmoregulation during a hot day.
Terangkan bagaimana hormon yang dinamakan dalan (d)(i) bertanggungjawab dalam osmokawalaturan semasa hari panas.

_____
_____
_____
_____
_____
_____

[3 marks]

(d) Diagram 5.2 shows a dialysis rnechine which is used to treat a patient with kidney failure. The concentration of dialysis fluid is similar to blood plasma but without waste products.
Rajah 5.2 menunjukkan mesin dialisis yang digunakan untuk merawat pesakit yang
mengalami masalah ginjal gagal berfungsi.
Kepekatan cecair dialysis adalah sama dengan plasma darah tetapi tanpa hasil-hasil
buangan.

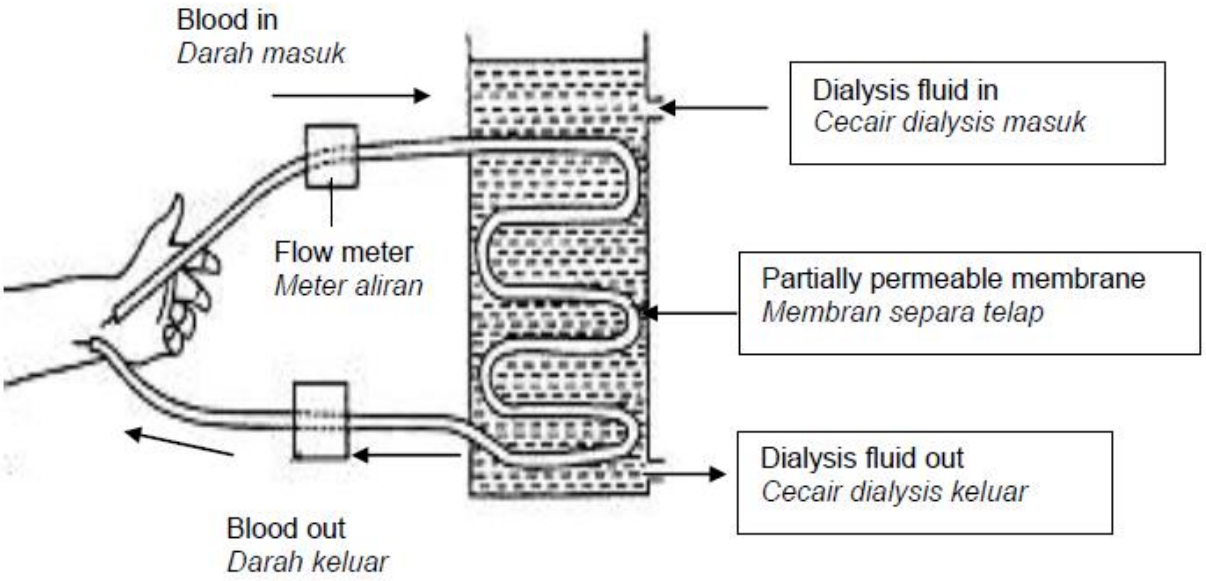


Diagram 5.2
Rajah 5.2

(e) Explain why the concentration of dialysis fluid is similar to the blood plasma.
Terangkan kenapa kepekatan cecair dialisis sama seperti plasma darah.

_____
_____
_____
_____
_____
_____

[3 marks]

Suggested Answer

(a)(i)	Ultrafiltration
(ii)	F : High hydrostatic pressure P1: caused by the bigger diameter of the afferent arteriole compared to the efferent arteriole P2: many constituents of the blood to be filtered out into the Bowman's capsule
(b)	P1: Glucose and amino acids are reabsorbed at Q. P2: Glucose / amino acid is present in Q but absent in R. P3: R contain more urea / uric acid /ammonia compared to Q
(c) (i)	ADH // Antidiuretic hormone
(ii)	During hot day, more sweat is produced the blood osmotic pressure is high More ADH is secreted by pituitary gland Increases the permeability of collecting duct to water More water is reabsorbed Blood osmotic pressure back to normal Less urine produced // urine becomes more concentrated
(d)	The concentration of urea and salts are higher in the blood compared to dialysis fluid As the blood flow through the coiled tubing / dialysis machine, excess urea and salts diffuse across the tubing walls into dialysis fluid. Therefore, urea and excess salts can be removed from the patient's blood. Osmotic pressure can be maintained at normal level

QUESTION 2 - 2014 PAHANG

Diagram 4.1 shows the regulation of blood glucose level.
Rajah 4.1 menunjukkan pengawalaturan aras gula darah.

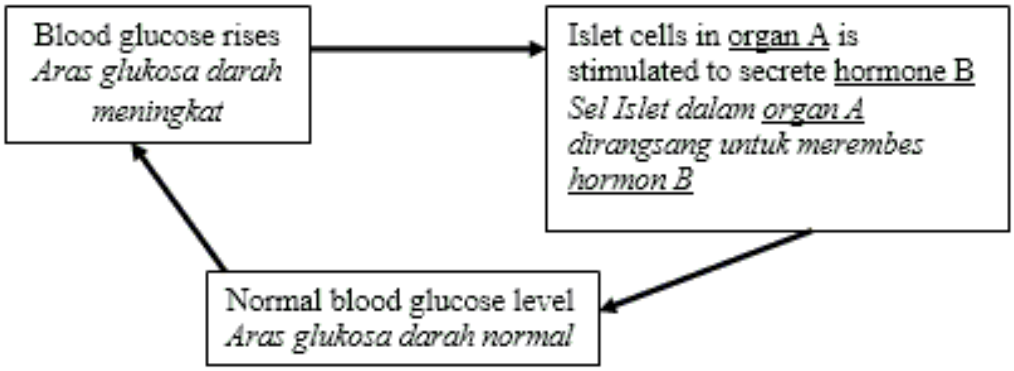


Diagram 3.1
Rajah 3.1

(a) (i) Name organ A and hormone B.
Namakan organ A dan hormon B.

Organ A: _____

Hormone B: _____ [2 marks]

(ii) Explain why blood glucose level rises.
Terangkan mengapa aras gula darah meningkat.

_____
_____
_____
_____
_____
_____
[2 marks]

(iii) The normal range of blood glucose level in humans is 75-110mg/100ml. Explain what will happen if our blood glucose level is 60mg/100ml.
Julat normal aras glukosa darah manusia ialah 75-110mg/100ml. Terangkan apakah yang akan berlaku jika aras tersebut ialah 60mg/100ml.

_____
_____
_____
_____
_____
_____
[3 marks]

(b) Diagram 4.2 shows a nephron.
Rajah 3.2 menunjukkan nefron.

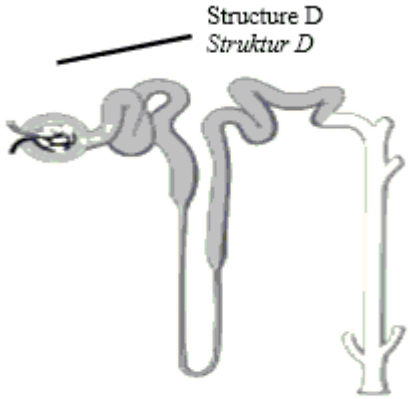


Diagram 4.2
Rajah 4.2

Explain the process occurs at structure D if a person undergoes sport activity.
Terangkan proses yang berlaku di struktur D jika seseorang melakukan aktiviti sukan.

_____

_____

[2 marks]

(c) Parkinson's disease typically affects victim around age 60. Research is underway to find a cure for Parkinson's disease by using stem cell transplantation. Explain briefly the disease.
Penyakit Parkinson biasanya terjadi pada mangsa berumur 60 tahun. Kajian sedang dijalankan dengan menggunakan pemindahan sel stem untuk mendapatkan kaedah rawatan. Terangkan secara ringkas penyakit tersebut.

_____

_____

[3 marks]

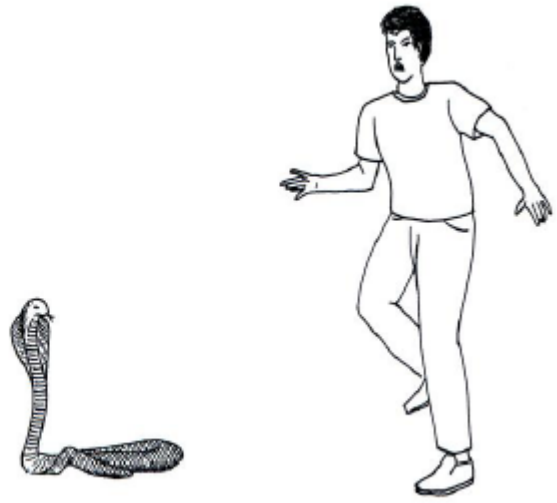
Suggested Answer

a.i	**Able to name organ A and hormone B** Sample answers Organ A : Pancreas Hormone B: Insulin
a.ii	**Able to explain why blood glucose level rises** Sample answers P1: because carry out vigorous exercise // sweating P2: because of meal / food / salted food / carbonated drink intake
a.iii	**Able to explain what will happen if our blood glucose level is 60mg/100ml** Sample answers P1: negative feedback mechanism works

	P2: pancreas (is stimulated) to secrete glucagon P3: glucagon stimulates liver to breakdown glycogen into glucose P4: glucagon promotes lipid breakdown P5: which releases fatty acids P6: that can be metabolised for energy
b	**Able to explain the process occurs at proximal convoluted tubul if a person undergoes sport activity** **Sample answers** P1: D is proximal convoluted tubul P1: (the process is) reabsorption P2: more water is reabsorbed
c	**Able to explain briefly Parkinson's disease** Sample answers P1: It is progressive disorder of the central nervous system P2: it affects muscular movement P3: causing tremor / trembling of arms / jaws / legs / face P4: difficulty in maintaining posture / impaired balance and coordination

QUESTION 3 - 2014 JOHOR BATU PAHAT

Diagram 4.1 shows fear situation faced by a student.
Rajah 4.1 menunjukkan situasi cemas yang dihadapi oleh seorang pelajar.



Rajah 4.1
Diagram 4.1

Diagram 4.2 shows a coordination mechanism in the body towards the situation that the situation that the student faced.
Rajah 4.2 menunjukkan mekanisme koordinasi badan pelajar tersebut terhadap situasi yang dihadapinya.

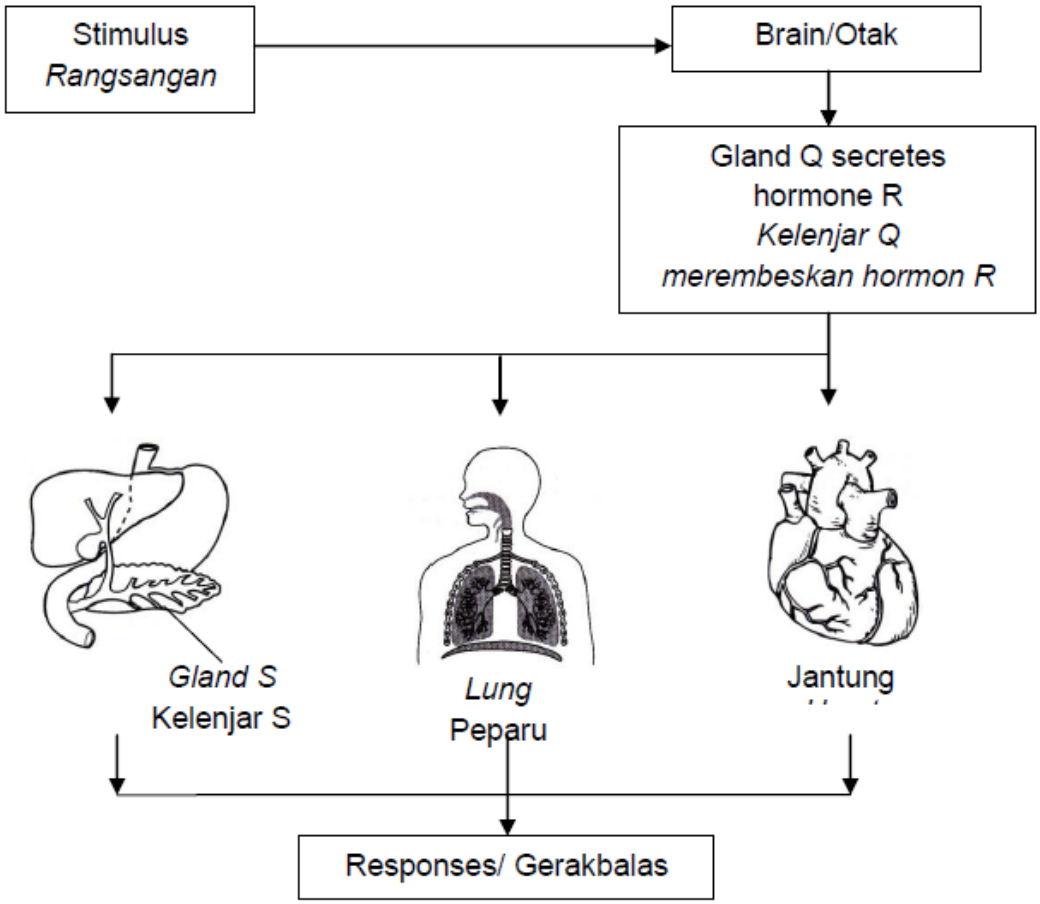


Diagram 4.2
Rajah 4.2

(a) (i) State gland Q and hormone R.
Nyatakan kelenjar Q dan hormon R.
Gland Q / *Kelenjar Q* : _____
Hormone K / *Hormon R* : _____
[2marks]

(ii) Based on the diagram, state the function of brain.
Berdasarkan rajah di atas, nyatakan fungsi otak.
_____
_____
[2 marks]

(iii) Explain the effect of secretion of hormone R to lung and heart.
Terangkan kesan perembesan hormon R terhadap peparu dan jantung.
_____
_____
_____
[3 marks]

(b) Sugar level in the blood is low. Explain how gland S can play the role to handle the situation above.

Didapati paras gula dalam darah pelajar tersebut adalah rendah. Terangkan bagaimana kelenjar S boleh berperanan untuk menghadapi situasi di atas.

_____

_____

[3 marks]

(c) There are two option of responses that can be taken by the student. Explain both response option to handle the situation above.
Terdapat dua pilihan gerakbalas yang boleh diambil oleh pelajar tersebut. Jelaskan kedua-dua pilihan gerakbalas tersebut bagi menghadapi situasi di atas.

_____

_____

[2 marks]

Suggested Answer

(a)(i)	Kelenjar Q : Kelenjar adrenal Hormon R: Adrenalina
(ii)	• Menerima impuls saraf daripada reseptor • Mentafsir maklumat lalu menghantar maklumat ke kelenjar Q
(iii)	**Peparu** • Meningkatkan kadar penafasan **Jantung** • Meningkatkan kadar denyutan jantung • Meningkatkan tekanan darah • Meningkatkan pengaliran darah ke otot
(b)	• Kelenjar S ialah pankreas • Pankreas merembeskan hormon glukagon untuk menukarkan glikogen kepada glukosa • Paras glukosa dalam darah meningkat • Kadar metabolisme turut meningkat untuk menghasilkan lebih banyak tenaga
(c)	Gerakbalas 'Lawan' – Menyerang balas terhadap ular / membunuh ular Gerakbalas 'Lari' – Lari / menjatuhkan diri daripada ular

QUESTION 4 - 2014 SELANOR SG. PELEK

Diagram 4.1 shows two different actions of the eye when exposed to different light intensity.
Rajah 4.1 menunjukkan dua tindakan mata yang berbeza apabila terdedah kepada keamatan cahaya yang berbeza.

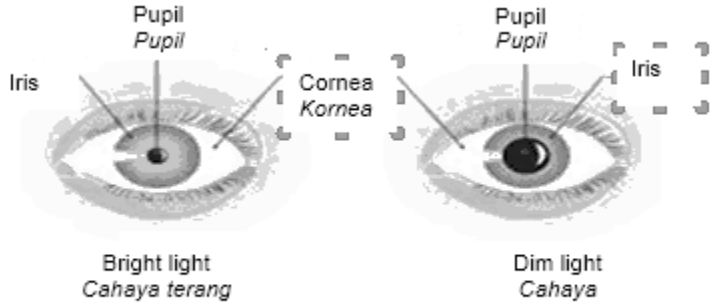


Diagram 4.1/*Rajah 4.1*

(a) (i) State what happens to the pupils in :
Nyatakan apakah yang berlaku kepada pupil dalam :

Bright light : _____
Cahaya terang

Dim light : _____
Cahaya malap

[2 marks/2 markah]

(ii) Explain how the nervous system involved in the response of the pupil to the stimuli of the bright light.
Terangkan bagaimana sistem saraf terlibat dalam tindakan pupil terhadap rangsangan kepada cahaya yang terang.

_____
_____
_____

[2 marks/2 markah]

(b) Name the type of action shown by the pupil.
Namakan jenis tindakan yang ditunjukkan oleh pupil.

_____

[1 mark/1 markah]

(c) Justify your answer.
Jelaskan jawapan anda.

_____
_____
_____

[2 marks/2 markah]

(d) Diagram 4.2 shows a baseball player trying to catch a ball.
Rajah 4.2 menunjukkan seorang pemain bola lisut sedang cuba untuk menangkap bola.

Diagram 4.2/*Rajah 4.2*

(i) Name the receptor and effector involved in the action of the baseball player.
Namakan reseptor dan efektor yang terlibat dalam tindakan yang dilakukan oleh pemain besbol itu.

Receptor : _____
Reseptor
Effector : _____
Efektor

[2 marks/2 markah]

(ii) Suggest what will happen to the player if his efferent neurone is damage due to an injury.
Cadangkan apakah yang akan berlaku kepada pemain itu jika neuron eferen rosak akibat suatu kecederaan.

_____
_____
_____

[2 marks/2 markah]

(iii) Which part of the brain controlled his action as shown in Diagram 4.2?
Bahagian otak yang manakah mengawal tindakan lelaki seperti yang ditunjukkan dalam Rajah 4.2?

_____

[1 mark/1 markah]

Suggested Answer

4 (a) (i)	Able to state what happen to the pupils in : Answer : Bright light : smaller size Dim light : Bigger size
(ii)	Able to explain how the nervous system involved in the response. Answer : P1: Receptor in the eyes detect the stimulus

	P2: Impulses are sent from receptor to the central nervous system/brain P3 : via the afferent neurone
(b)	Able to name the type of action. Answer : P1 : Involuntary action
(c)	Able to justify your answer. Answer : P1: the action cannot be controlled by will P2 : occurs without conscious mind P3 : controlled by medulla oblongata
(d) (i)	Able to name receptor and effector. Answer : Receptor : Eyes/retina/photoreceptor Effector : Muscles/skeletal muscles of the arm
(ii)	Able to suggest what will happen if efferent neurone is injured. Answer : P1 : Impulses cannot be transmitted from brain to muscles P2 : the player cannot catch the ball
(iii)	Able to state the part that controls the action. Answer : Cerebrum

QUESTION 5 - 2014 KEDAH MODUL 2

Diagram 7.1 shows some scouts who suddenly saw a snake in front of them. They were frightened and ran as fast as they could away from the snake.

Rajah 7.1 menunjukkan beberapa orang pengakap yang ternampak ular secara tiba-tiba di hadapan mereka. Mereka ketakutan dan berlari sepantas yang boleh daripada ular tersebut.

Diagram 7.1
Rajah 7.1

(a) Explain how the following organs or systems response in a fight or flight in the above situation
Terangkan bagaimana organ dan sistem berikut bertindakbalas dalam situasi lawan atau undur dalam situasi di atas
Eyes / Mata : _____

Brain / Otak : _____

Endocrine gland / Kelenjar endokrin : _____

Heart and Blood circulatory system / Jantung dan Sistem peredaran darah :
_____

Muscular system / Sistem otot : _____

[10 marks]

(b) Tropism is a growth response of the shoot tips and root tips towards an external stimuli. Tropism is controlled by the plant hormone called auxins
Diagram 7.2 shows the growth of seedlings under different condition.

Trapisma ialah gerak balas hujung pucuk dan akar terhadap ransangan luar.
Tropisma dikawal oieh hormon tumbuhan dikenali sebagai auksin
Rajah 7.2 menunjukkan pertumbuhan anak benih di bawah keadaan berlainan.

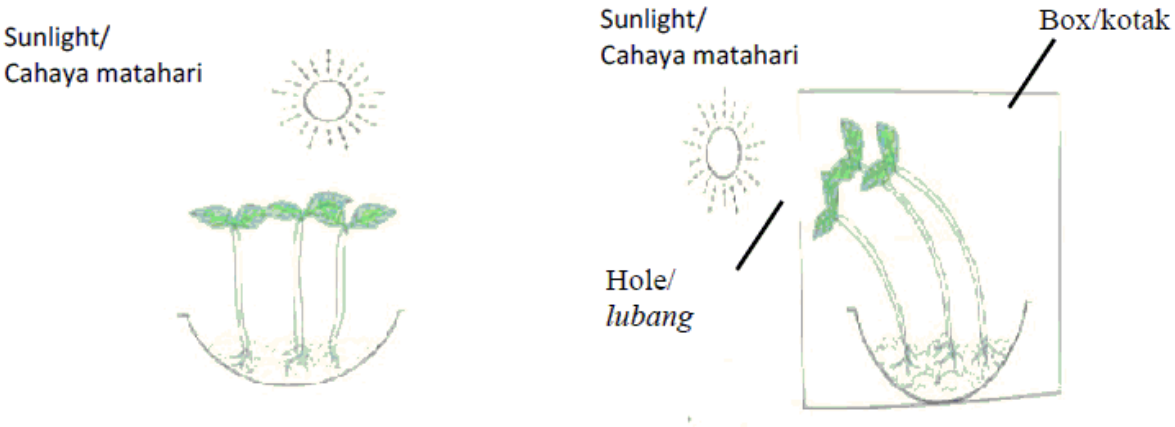


Diagram 7.2
Rajah 7.2

Explain how auxins influences the response of shoot to sunlight
Terangkan bagaimana auksin mempengaruhi gerakbalas pucuk terhadap cahaya matahari

_____
_____
_____
_____
_____
_____

[6 marks]

(c) Describe how tropism benefits plants in their natural habitats
Jelaskan bagaimana tropisma berfaedah kepada tumbuhan dalam habitat semulajadinya.

_____
_____
_____

[4 marks]

Suggested Answer

(a)	Able to explain how the following organs functions in a fight or flight situation
(i)	P1: Eyes act as sense organ/receptor to detect a external stimulus / snake P2: A nerve impulse is transmitted to the brain.
(ii)	P3: Brain / Hypothalamus received the nerve impulse P4: Interpret the nerve impulse P5: Transmit nerve impulses to different effectors / adrenal gland / muscle / heart / lungs.
(iii)	P6: Endocrine gland / Adrenal gland secrete adrenaline / noradrenaline. P7: Adrenaline / Norodrenoline hormone stimulate increase in heartbeat / breathing rate / blood pressure / blood glucose level / metabolic activity
(iv)	P8: Heart beats faster / blood pressure increases P9: More glucose / oxygen is transported in the blood to muscles
(v)	P10: Muscles carry out cell respiration P11: More energy is produced P12: More muscle contraction P13: Legs can run faster
(b)	P1: When the shoot / seedings / plants is exposed to the sun from all directions, auxin is distributed uniformly. P2: The seedlings/plant grow straight upward P3: When the shoot'plant is exposed to the sun from one side, auxin is found in a higher concentration at the side sheltered from the sun. P4: The different concentration causes the cell in the sheltered side to grow faster than on the brighter side. P5: The shoot grows bending towards the sun. P6: The growth of plants towards the sun is called phototropism.
(c)	Pl: (Phototropism) helps plant to get maximum amount of sunlight for photosynthesis P2: (Geotropism) assures that the roots grow into the soil to hold the plants firmly in the soil. P3: (hydrotropism) help the roots to get water and mineral salts from the soil P4: (Thigmotropism) enables plants with soft stem to climb on their support P5: to get maximum amount of sunlight for photosynthesis

QUESTION 6 - 2014 JOHOR BATU PAHAT

Diagram 8.1 shows the pathway of a reflex action or reflex arc, when the hand accidentally touches sharp needle.

Rajah 8.1 menunjukkan laluan satu tindakan reflek atau arka reflek, semasa tangan tidak sengaja menyentuh jarum tajam.

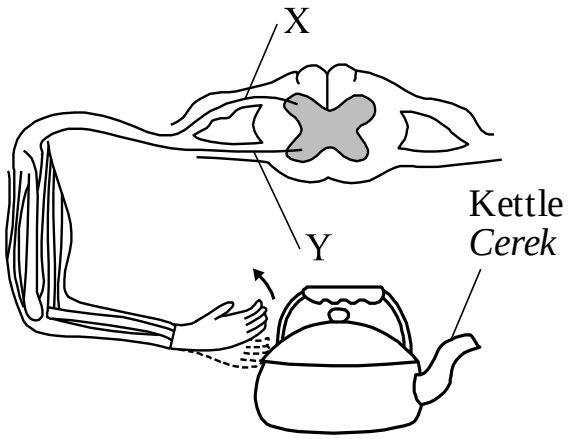


Diagram 8.1
Rajah 8.1

(a)(i) Define reflex action.
Takrifkan tindakan reflek.

[2 markah]

(ii) Based on Diagram 8.1, explain how reflex action functions to avoid the injury.
Berdasarkan Rajah 8.1, terangkan bagaimana tindakan reflek berfungsi untuk mengelakkan kecederaan.

[8 markah]

(b) Table 8.1 shows some activities done by a human.
Jadual 8.1 menunjukkan beberapa aktiviti yang dilakukan oleh manusia.

Eating	Breathing	Peristalsis	Running
Makan	*Bernafas*	*Peristalsis*	*Berlari*

Table 8.1 / *Jadual 8.1*

(i) Based on Table 8.1, classify the activities into voluntary action and involuntary action.
Berdasarkan Jadual 8.1, kelaskan aktiviti kepada tindakan terkawal dan tindakan luar kawal.

[2 markah]

(ii) Explain the comparison and differences between voluntary action and involuntary action.
Terangkan perbandingan dan perbezaan di antara tindakan terkawal dan tindakan luar kawal.

[8 markah]

Suggested Answer

<table>
<tr><td>(a)(i)</td><td>Dapat memberikan takrif tindakan reflek
P1 Tindakan balas yang cepat / serta merta /automatik
P2 Hanya melibatkan saraf tunjang // Tidak melibatkan otak</td></tr>
<tr><td>(a)(ii)</td><td>Dapat menghuraikan arka reflek berdasarkan Rajah 8.1
P1 Sakit adalah rangsangan
P2 Reseptor mengesan rangsangan / sakit
P3 dan mencetuskan impuls (saraf)
P4 Aferen neuron menghantar impuls ke interneuron / saraf tunjang
P5 Impuls dipindahkan merentasi sinaps (dalam jirim kelabu) // Neuron aferen bersinaps dengan interneuron dan kemudian bersinaps dengan neuron eferen
P6 Neuron eferen menghant impuls ke efektor / otot / bisep
P7 Bisep akan mengecut
P8 lalu menarik lengan daripada objek tajam</td></tr>
<tr><td>(b)(i)

8(b)(ii)</td><td>Dapat mengelaskan aktiviti kepada tindakan terkawal dan tindakan luar kawal
<table>
<tr><td>Tindakan terkawal</td><td>Tindakan luar kawal</td></tr>
<tr><td>Makan</td><td>Muntah</td></tr>
<tr><td>Berlari</td><td>Peristalsis</td></tr>
</table>
Dapat menerangkan perbandingan dan perbezaan tindakan terkawal dan tindakan luar kawal
Persamaan :
P1 Kedua-dua tindakan terkawal dan tindakan luar kawal melibatkan koordinasi sistem saraf
P2 Kedua-dua tindakan terkawal dan tindakan luar kawal merupakan gerakbalas terhadap rangsangan yang diterima
Perbezaan :
<table>
<tr><td>Tindakan Terkawal</td><td>Perbezaan</td><td>Tindakan Luar Kawal</td></tr>
<tr><td>Mengikut kemahuan seseorang</td><td>Cara berlaku</td><td>Tidak mengikut kemahuan seseorang</td></tr>
<tr><td>Berlaku di bawah kesedaran seseorang</td><td>Kesedaran</td><td>Berlaku secara tidak disedari</td></tr>
<tr><td>Serebrum</td><td>Pusat integrasi</td><td>Medula oblongata</td></tr>
<tr><td>Rangsangan luar</td><td>Rangsangan</td><td>Rangsangan dalam</td></tr>
<tr><td>Organ deria</td><td>Reseptor</td><td>Reseptor dalam yang khusus</td></tr>
<tr><td>Otot rangka</td><td>Efektor</td><td>Otot licin,otot kardiak</td></tr>
</table>
</td></tr>
</table>

			dan kelenjar