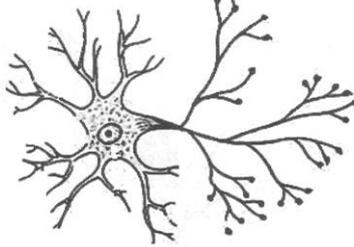


SOALAN ULANGKAJI BAB 3

BIOLOGI TINGKATAN 5

SECTION A: OBJECTIVES
QUESTIONS

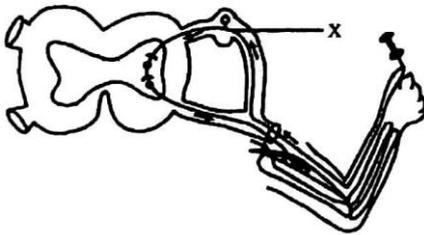
1. Diagram shows a type of neurone.



What is the type of this neurone?

- A Afferent neurone
- B Efferent neurone
- C Interneurone
- D Neurotransmitter

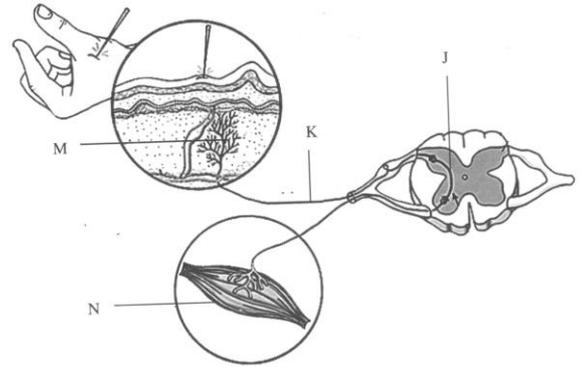
2. Diagram shows part of the nervous system, including a reflex arc



What are the effects of the prick?

	Pain felt	Arm moved
A	No	No
B	No	Yes
C	Yes	No
D	Yes	Yes

3. Diagram shows the pathway of nerve impulses in reflex arc.

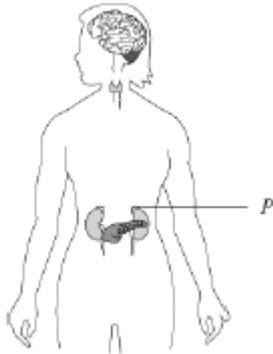


Which statement about the pathway is correct?

- A J transmits nerve impulses from the receptor to K
 - B N transmits nerve impulses to J and carries it to K
 - C M causes the finger to respond
 - D N causes the hand to respond
4. Which of the following is correct reflex arc when a cook accidentally cut his finger while preparing a meal?
- A Afferent neurone → receptor → spinal cord → efferent neurone → effector
 - B Receptor → efferent neurone → spinal cord → afferent neurone → effector
 - C Efferent neurone → effector → spinal cord → afferent neurone → receptor
 - D Receptor → afferent neurone → spinal cord → efferent neurone → effector
5. A man involved in a road accident. The accident caused injury to his brain and affected his ability to speak. Which part of the brain is affected?

- A Cerebellum
- B Cerebrum
- C Medulla oblongata
- D Spinal cord

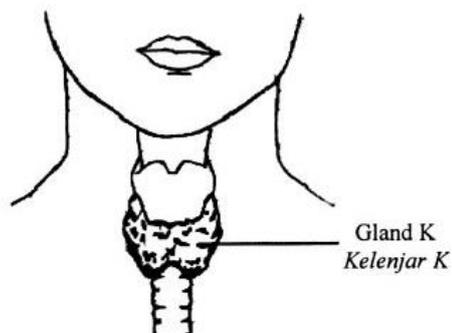
6. Diagram shows the human endocrine system.



What is the hormone secreted by P which plays an important role in controlling the blood osmotic pressure?

- A Aldosterone
- B Insulin
- C Adrenaline
- D Antidiuretic hormone (ADH)

7. Diagram shows a human endocrine gland.



What is the function of the hormone secreted by gland K?

- A Decrease blood sugar level
- B Increases metabolism rate of body cells
- C Increases reabsorption of salts in kidney
- D Decrease tissues growth and development

8. Which of the following treatment is suitable for diabetes mellitus?

- A Increase intake of vitamin C
- B Decrease intake of fatty food
- C Inject with glucagon
- D Inject with insulin

9. Diagram 9 represents a dialysis machine.

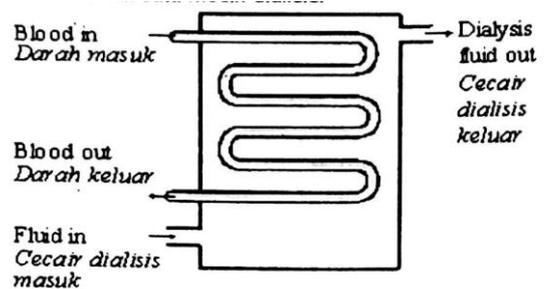


Diagram 9

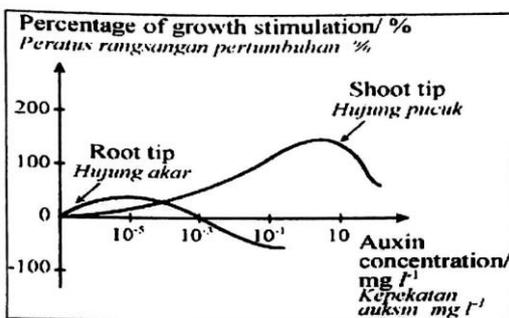
Which substances in the dialysis fluid must be at the same concentration as that in blood?

- A Amino acids and urea
- B Glucose and amino acids
- C Glucose and urea
- D Urea and salts

10. Which of the following is the possible effect of drugs on the coordination of human body?

- A Slows down the transmission of nerve impulse
- B Accelerate the activity of the central nervous system
- C Increase contraction of skeletal muscles
- D Increase the blood flow

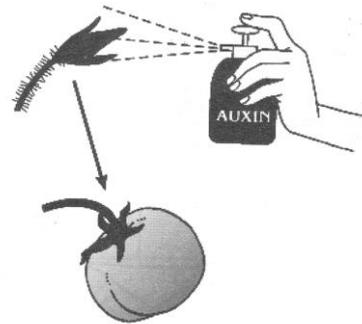
11. Graph shows the effect of the concentration of auxin on the growth of the shoot tips and root tips.



If the concentration of the auxin is in the range of 10⁻³ to 10⁻¹ mg l⁻¹, what is the effect of auxins on the growth of cells of the shoot tip and the root tip?

	Cell of the shoot tip	Cells of the root tip
A	Growth stimulation	Growth inhibition
B	Growth inhibition	Growth stimulation
C	Growth stimulation	Growth stimulation
D	Growth inhibition	Growth inhibition

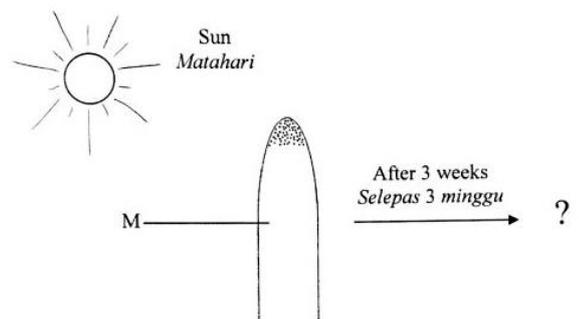
12. Diagram shows a method used in stimulating fruit development.



What is the effect of applying auxin to the fruit produced?

- A The fruit is more succulent
- B The fruit will not have seeds
- C The fruit is sweeter
- D The fruit has more vitamin C

13. Diagram shows a shoot which is exposed to sunlight



What is the concentration of auxin at M and the direction growth of shoot after 3 weeks?

	Concentration of Auxin at M	Direction of shoot growth
A	High	Towards light
B	Low	Towards light
C	High	Away from light
D	Low	Away from light

14. A bunch of banana in a basket ripen after a few days. Which of the following hormones caused the banana to ripen?

- A Auxin
- B Cytokinin
- C Ethylene
- D Giberelin

15. Diagram shows a farmer spraying ethylene onto the banana.



What is the result of ethylene to the bananas?

- A The bananas will be more succulent
- B The bananas will not have seeds
- C The bananas will be sweeter
- D The bananas will ripen at the same time

SECTION B: STRUCTURE

1 **Diagram 1.1** shows a reflex arc in human.

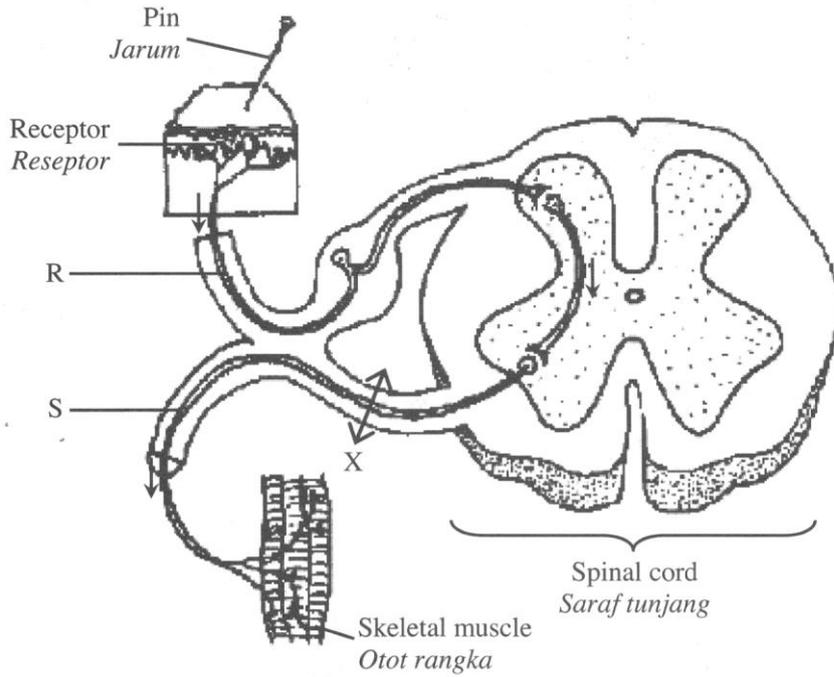


Diagram 1.1

(a)(i) Name the nerve cells R and S.

R:.....
S:.....

[2 marks]

(ii) State the difference in the structure and function between cells R and S.

Structure:.....
.....
Function:.....
.....

[2 marks]

(b)(i) Explain the meaning of reflex action.

.....
.....

[2 marks]

(ii) A man involved in an accident, his ventral root at X was injured.

Explain how the injury affects his action when he accidentally pricked by a sharp pin.

.....
.....
.....

[2 marks]

(c) Diagram 1.2 shows a junction between two neurons.

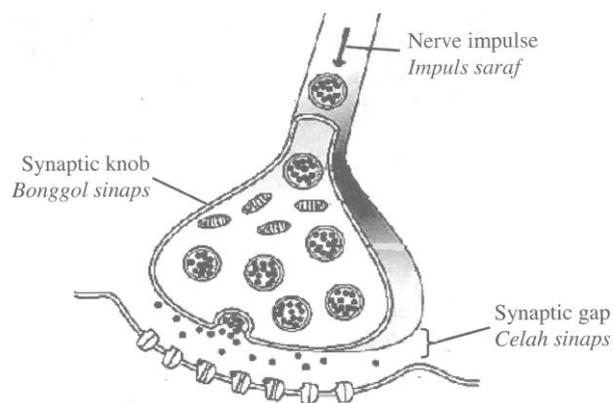


Diagram 1.2

Explain the transmission of nerve information across the synaptic gap.

.....
.....
.....

[2 marks]

(d) What organelles are abundant in nerve cells. Explain why.

.....
.....
.....

[2 marks]

2 **Diagram 2.1** shows part of human endocrine system.

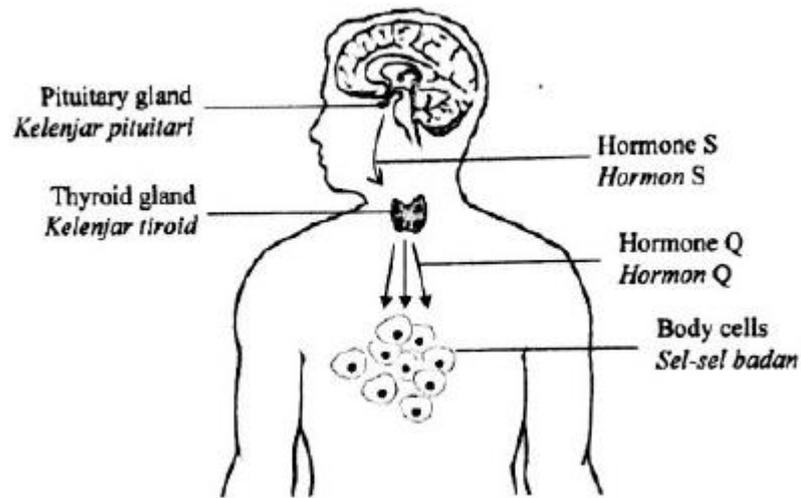


Diagram 2.1

(a)(i) Based on Diagram 2.1, name hormone S.

.....
[1 mark]

(ii) State the function of hormone S.

.....
[1 mark]

(b) Diagram 2.2 shows the effect of an imbalance in secretion of hormone Q in an individual.



Diagram 2.2

Based on Diagram 2.2.

- (i) State one physical symptom.

.....

[1 mark]

- (ii) Explain how this condition occurs.

.....
.....
.....
.....

[3 marks]

- (c) Diagram 2.3 shows Mr. K taking a rest after working under the hot sun for along period of time.

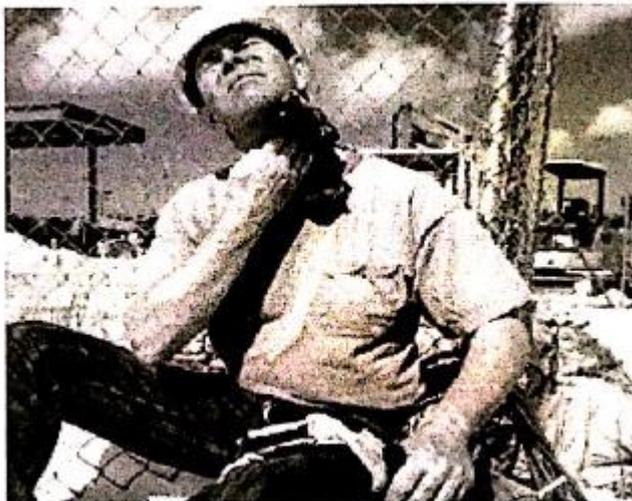


Diagram 2.3

- (i) State the condition of Mr. K's blood osmotic pressure at this time.

.....

[1 mark]

(ii) Explain how the pituitary gland responds to regulate the blood osmotic pressure in his body.

.....
.....
.....
.....

[3 marks]

(d) Based on the statement, explain why Mr. K will produce a large volume and dilute urine after taking an alcoholic drink.

Alcohol drinks have depressant effect on the activity of central nervous system and can inhibit the release of ADH

.....
.....

[2 marks]

Section C: Essays

- 1(a) Diagram 1.1 shows a nerve pathway involve in the reflex action when knee is knocked.

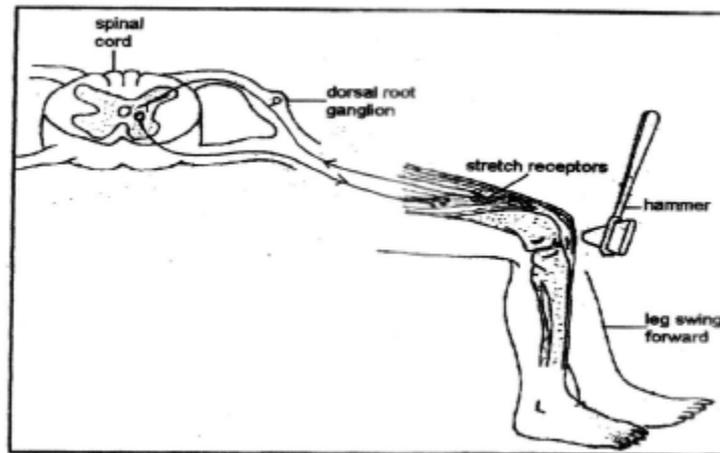


Diagram 1.1

- (i) Define reflex action and explain the importance. [4 marks]
- (ii) Based on Diagram 1.1, describe the pathway of nerve impulse that cause the reflex action [6 marks]
- (iii) Based on the following statement, explain why movement of a person suffering from Parkinson becomes weak and more difficult?

Parkinson disease is a degenerative neurological disorder causing tremors and weakened muscle tissue

[4 marks]

- (b) A boy was attacked by a goose on his way back home after playing.



Describe how the nervous system and endocrine system cause physiological changes in his body during this situation.

[6 marks]

- 2(a) Diagram 2.1 shows a man was attacked by a robber.
Diagram 2.2 shows the sequence of organs and tissue that involved in responding to that situation.

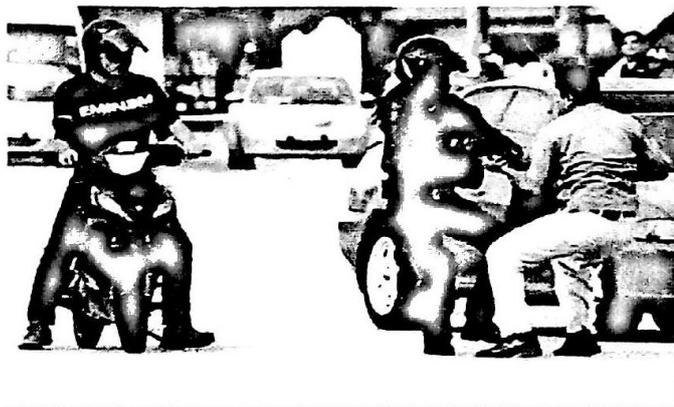


Diagram 2.1

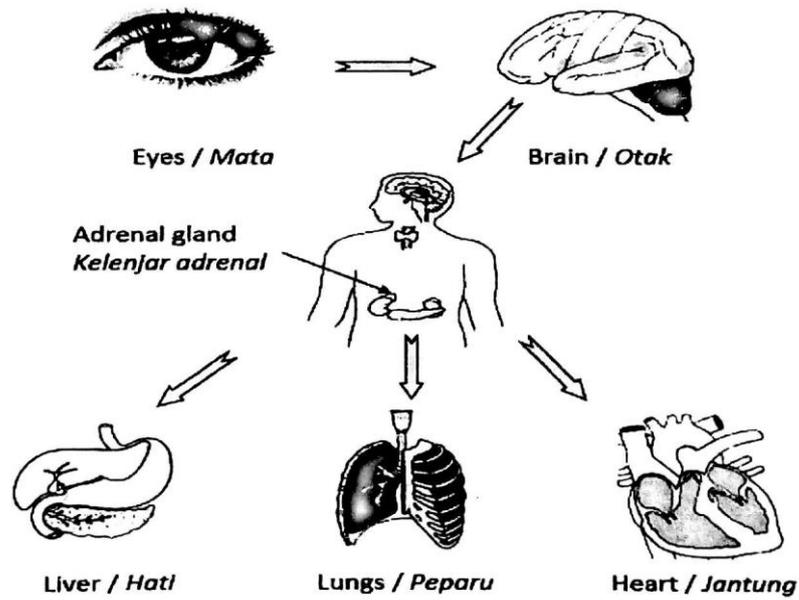


Diagram 2.2

Explain the role of nervous system and endocrine system of the man in this situation.

[10 marks]

- b(i) Diagram 2.3 shows the transmission of nerve impulse from neurone P to neurone Q through structure R

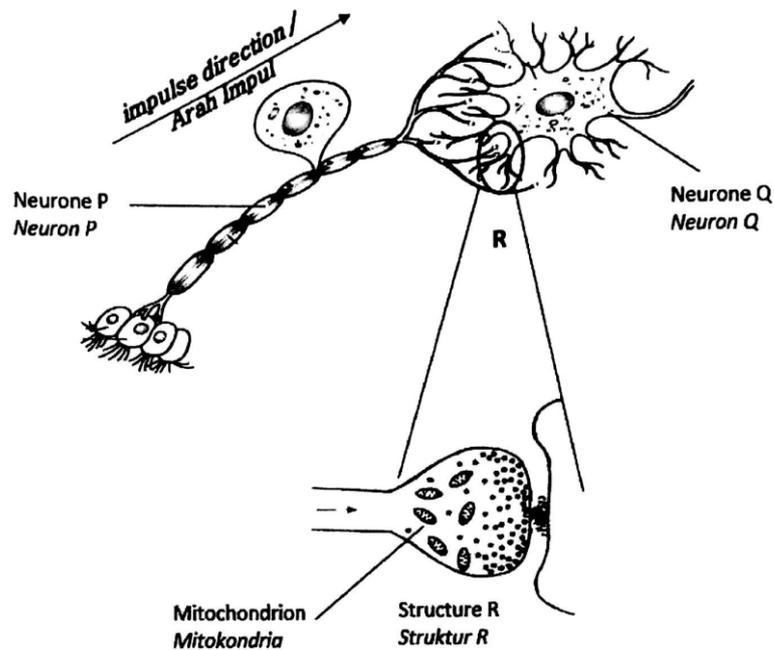


Diagram 2.3

Explain the transmission of nerve impulses across the structure R.

[6 marks]

- (ii) Diagram 2.4 (a) shows a shoot of seedling bending towards light source.
Diagram 2.4 (b) shows the effect of light on a plant hormone.

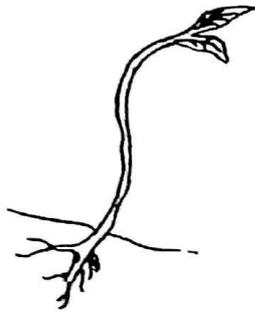


Diagram 2.4 (a)



Diagram 2.4 (b)

Based on Diagram 2.4(b), explain the response of the shoot of a seedling towards the light source.

[4 marks]

ANSWER SCHEME

SECTION A: OBJECTIVE

1.	C	2.	A	3.	D	4.	D
5.	B	6.	A	7.	B	8.	D
9.	B	10.	A	11.	A	12.	B
13.	B	14.	C	15.	D		

Question 1

No	Marking Criteria	Marks										
(a)(i)	R: afferent neurone// sensory neurone S: efferent neurone// motor neurone	1 1	2									
(ii)	Structure: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">P1:</td> <td style="width: 35%;">R has long dendron</td> <td style="width: 15%;">S has long axon</td> </tr> <tr> <td>P2:</td> <td>R is attached to receptor</td> <td>S is attached to effector</td> </tr> </table> (Any 1) Function: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">F1:</td> <td style="width: 35%;">R sends nerve impulse from receptor</td> <td style="width: 15%;">S sends nerve impulse to effector</td> </tr> </table>	P1:	R has long dendron	S has long axon	P2:	R is attached to receptor	S is attached to effector	F1:	R sends nerve impulse from receptor	S sends nerve impulse to effector	1 1 1	2
P1:	R has long dendron	S has long axon										
P2:	R is attached to receptor	S is attached to effector										
F1:	R sends nerve impulse from receptor	S sends nerve impulse to effector										
(b)(i)	P1: an autoimmune response / action (to a particular stimulus) P2: involves involuntary contraction of skeletal muscles P3: involves the spinal cord only // does not involve central nerve system (any 2)	1 1 1	2									
(ii)	P1: He is able to detect / feel the pain P2: because the afferent neuron is not affected // impulse can be transmitted to the spinal cord / central nervous system P3: impulse cannot be sent to the effector P4: Muscle cannot be contracted (Any 2)	1 1 1	2									
c)	P1: (At the synaptic knob), the nerve impulse is converted into chemical signal/neurotransmitter P2: Neurotransmitter diffuse through the synaptic knob to the adjacent / next dendrite P3: (At the adjacent dendrite) the chemical signal/ neurotransmitter is converted back to nerve impulse // new impulse is triggered	1 1 1 (Any2)	2									
(d)	P1: Mitochondria P2: to generate more energy P3: for transmission of impulse// ion pumps	1 1 1 Any 2	2									
	TOTAL		12									

Question 2

No	Marking Criteria	Marks	
(a)(i)	Thyroid stimulating hormone	1	1
(ii)	To stimulate the synthesis / release of thyroxine (from thyroid gland)	1	1
(b)(i)	Goiter//swollen at neck / Enlarged of the thyroid gland	1	1
(ii)	F1: Iodine deficiency E1: Production of thyroxine decreases/too little E2: Thyroid gland enlarge to compensate / adjust the deficiency	1 1 1	3
c(i)	Blood osmotic pressure increase/higher	1	1
(ii)	E1: Pituitary gland is stimulated E2: to secrete more ADH E3: (ADH) increases the permeability of distal convoluted tubule and collecting duct toward water E4: More water is reabsorbed (from the filtrate to blood capillary) E5: Blood osmotic pressure decreases (to the normal range) E6 : urine produced small in volume	1 1 1 Any 3	3
TOTAL			12

Section C: Essays

Question 1

No 7	Cadangan jawapan	Markah	
(a) (i)	P1 - Tindakan reflex adalah gerak balas automatik P2 - yang berlaku dengan pantas / tanpa disedari P3 - tanpa dikawal oleh otak /tindakan luar kawalan P4 - melibatkan otot rangka dan saraf tunjang sahaja Kepentingan P1 - dapat melindungi manusia daripada terus cedera P2 - kerana tindakan reflex berlaku dengan pantas	1m 1m 1m 1m 1m 1m	 maks = 4 m

(ii)	P1 - Apabila tendon di bawah tempurung lutut diketuk	1m	mana-mana 6 jawapan	Maks = 6m
	P2 - Otot kuadrisep menjadi regang	1m		
	P3 - Reseptor regang pada otot kuadrisep dirangsang	1m		
	P4 - Impuls saraf dicetuskan pada neuron aferen	1m		
	P5 - Neuron aferen menghantar impuls saraf ke neuron eferen	1m		
	P6 - Yang terdapat di dalam saraf tunjang	1m		
	P7 - Melalui akar dorsal pada saraf spina	1m		
	P8 - Impuls saraf merentasi sinaps di antara neuron aferen dengan neuron eferen	1m		
	P9 - Neuron eferen menghantar impuls saraf ke efektor	1m		
	P10 - iaitu otot kuadrisep	1m		
	P11 - Melalui akar ventral pada saraf spina	1m		
	P12 - Otot kuadrisep dirangsang lalu mengecut	1m		
	P13 - Menyebabkan kaki ditendang ke hadapan	1m		

	P1 - Neuron baru tidak dihasilkan bagi menggantikan neuron yang rosak/ telah mati	1m	mana-mana 4 jawapan	maks = 4m
	P2 - Menyebabkan kurang neurotransmitter / dopamine dihasilkan	1m		
	P3 - Impuls saraf merentasi sinaps sangat perlahan	1m		
	P4 - Keupayaan otak untuk mentafsir maklumat juga perlahan	1m		
	P5 - Maka pemindahan impuls menjadi perlahan	1m		
	P6 - Arteri serebrum mengeras	1m		
	P7 - otot tidak dapat berfungsi dengan cekap/ otot keras/ otot lemah	1m		
	P8 - pergerakan menggeletar / masalah keseimbangan/ masalah kordinasi badan	1m		

(D)	<p>P1 - Apabila dikejar oleh angsa/ rangsangan diterima/ takut timbul</p> <p>P2 - Impuls saraf dihantar dari reseptor ke otak</p> <p>P3 - Otak mentafsirkan maklumat</p> <p>P4 - Impuls saraf dihantar dari otak ke kelenjar adrenal</p> <p>P5 - Kelenjar adrenal dirangsang lalu menghasilkan hormon adrenalina</p> <p>P6 - Kesannya, kadar denyutan jantung/ tekanan darah / pengaliran darah ke otot bertambah</p> <p>P7 - Kadar pemaifasan / aras glukosa meningkat</p> <p>P8 - Kadar metabolisme meningkat</p> <p>P9 - Lebih banyak tenaga dihasilkan</p> <p>P10 -Untuk melawan atau melarikan diri daripada angsa itu.</p> <p>P11- Impuls saraf dihantar ke otot-otot rangka untuk melarikan diri</p>	<p>1m</p>	
	mana-mana 6 jawapan		maks =6m
	JUMLAH	20	markah

Question 2

QUESTION NO.	MARKING CRITERIA	SUB MARKS	TOTAL MARKS
6. (a)	<p>P1 The receptor / eyes detect stimulus</p> <p>P2 Sent nerve impulse to brain</p> <p>P3 The brain integrate and interpreted the information</p> <p>P4 Sent nerve impulse to adrenal gland</p> <p>P5 Adrenal secrete adrenaline</p> <p>P6 Adrenaline is transported by blood (to liver, lungs and heart)</p> <p>P7 (In the liver), glycogen is converted into glucose.</p> <p>P8 (Lungs), Breathing rate increases</p> <p>P9 Increase ventilation rate // gaseous exchange in the lungs</p> <p>P10 (Heart), Increase heartbeats</p> <p>P11 More blood /glucose /oxygen sent to skeletal muscles</p> <p>P12 Increase cellular respiration</p> <p>P13 More energy released</p> <p>P14 For muscles contraction //to respond / fight back / run away.</p>	<p>1</p>	<p>Max:</p> <p>10m</p>
	Any 10		

	(b)	(i)			
		P1	Nerve impulses reach axon terminal / synaptic knob	1	
		P2	Used energy from mitochondrion.	1	
		P3	Vesicle containing neurotransmitter	1	
		P4	Vesicle release the neurotransmitter into the synapse	1	
		P5	Neurotransmitter molecules diffuse across the synapse	1	
		P6	To the dendrite of another neurone	1	
		P7	The dendrite is stimulated	1	
		P8	To trigger a new impulse	1	
		P9	Travels down along the adjacent neurone.	1	
		Any 6		Max: 6M	

		(ii)			
		F:	Phototropism occur.	1	
		P1	More auxin (is accumulated) at the shaded area / dark site.	1	
		P2	High concentration of auxin promotes cell elongation.	1	
		P3	More cell elongate in the shaded area // cell on the light side grow slower than shaded area.	1	
		P4	Cause the shoot bends towards light source.	1	
		Any 4		4M	
				Total:	20 marks