SULIT

POLITEKNIK
Jabatan Pengajian Politeknik

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENGAJIAN POLITEKNIK
KEMENTERIAN PENGAJIAN TINGGI

JABATAN KEJURUTERAAN ELEKTRIK

PEPERIKSAAN AKHIR

SESI JUN 2013

EU301: ANATOMY AND PHYSIOLOGY

TARIKH : 24 OKTOBER 2013
TEMPOH : 2 JAM (8.30 AM – 10.30 AM)

Kertas ini mengandungi **SEMBILAN BELAS (19)** halaman bercetak.
Bahagian A : Objektif (20 soalan)
Bahagian B: Struktur (10 soalan)
Bahagian B: Esei (2 soalan)
Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

SECTION A : 20 MARKS
BAHAGIAN A : 20 MARKAH

INSTRUCTION:
This section consists of **TWENTY (20)** objective questions. Mark your answers in the OMR form provided.

ARAHAN :
*Bahagian ini mengandungi **DUA PULUH (20)** soalan objektif. Tandakan jawapan anda di dalam borang OMR yang disediakan.*

CLO1
C1

1. The function of cells is to carry out life processes and contain many organells. Which of the following organells is the energy supplier for cells ?
Sel berfungsi untuk menjana proses kehidupan dan mengandungi beberapa organel. Diantara manakah yang berfungsi sebagai pembekal tenaga bagi sel ?

A. lysosome
lisosom

B. golgi apparatus
jasad Golgi

C. mitochondria
mitokondria

D. nucleus
nukleus

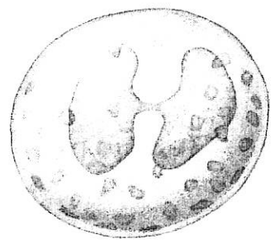

Figure 1
Gambarajah 1

CLO1
C1

2. In human, leucocytes are differentiated into agranulocytes and granulocytes. What is the name of the cell shown in Figure 1?
Pada manusia, leukosit terbahagi kepada agranulosit dan granulosit. Apakah nama bagi sel yang ditunjukkan di *Gambarajah* 1?

A. Eosinophil
Eosinofil

B. Neutrophil
Neutrofil

C. Basophil
Basofil

D. Monocyte
Monosit

CLO1
C2

3. Nervous system is made up of these three parts :
Sistem saraf merangkumi tiga bahagian tersebut :

A. Brain, spinal cord, nerves
Otak, saraf tunjang, saraf

B. Arteries, vein, nerves
Arteri, vena, saraf

C. Brain, spinal cord, heart
Otak, saraf tunjang, jantung

D. Nerve, liver, heart
Saraf, hati, jantung

CLO1
C1

4. Figure 2 shows a vertical section through the human brain.
Rajah 2 menunjukkan potongan bahagian otak manusia secara menegak.

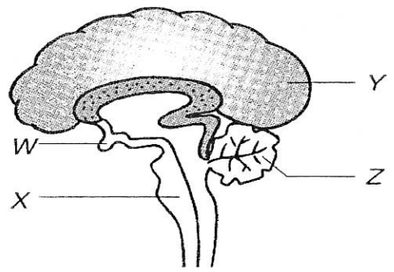

Figure 2
Gambarajah 2

Which part of the brain is matched **CORRECTLY** to its structure?
*Bahagian manakah yang dipadankan dengan **BETUL** pada strukturnya?*

	Part of brain	Function
A	W	Medulla *Medula*
B	X	Cerebrum *Cereberum*
C	Y	Thalamus *Talamus*
D	Z	Cerebellum *Cerebelum*

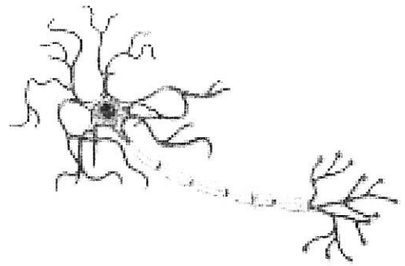

Figure 3
Gambarajah 3

CLO2
C2

5. The nervous system consists of nerve cells called neurones which carry nerve impulses. What is the function of the neuron in Figure 3?
Sistem saraf mempunyai sel-sel saraf atau neuron yang berfungsi untuk membawa impuls saraf. Apakah fungsi bagi neuron pada Gambarajah 3 ?

A. Carries nerve impulses from the receptor to the central nervous system
Membawa impuls saraf dari reseptor ke sistem saraf pusat

B. Carries nerve impulses from afferent neurone to efferent neurone.
Membawa impuls saraf dari neuron aferen ke neuron eferen

C. Carries nerve impulses from the central nervous system to the effector
Membawa impuls saraf dari sistem saraf pusat ke efektor

D. Carries nerve impulses from the central nervous system to the affector
Membawa impuls saraf dari sistem saraf pusat ke afektor

CLO2
C1

6. Figure 4 shows the human digestive system.
Gambarajah 4 menunjukkan system penghadaman manusia

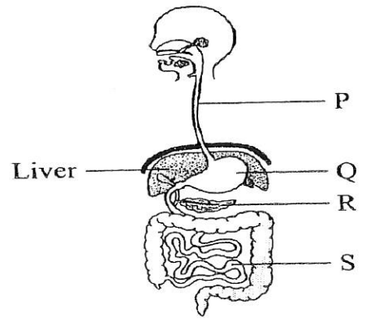

Figure 4
Gambarajah 4

Which structure of the digestive system is **INCORRECTLY** matched to its statement?

*Kenyataan manakah yang dipadankan dengan **TIDAK BETUL** pada struktur sistem penghadaman berikut?*

	Stucture of digestive system	Function
A	P	Control movement via peristalsis *Mengawal pergerakan melalui peristalsis*
B	Q	Stop the action of salivary amylase *Memberhentikan fungsi amilase liur*
C	R	Have glands to secrete enzyme. *Mempunyai kalenjar untuk menghasilkan enzim*
D	S	There are many vilus and microvillus to increase surface area for absorption *Terdapat banyak vilus dan mikrovilus untuk meningkatkan luas permukaan bagi penyerapan*

CLO2 C2

7. Which of the following statement is **CORRECT** ?
*Antara kenyataan dibawah yang manakah **BENAR**?*

I. Hydrocloric acid stops the action of salivary amylase
Asid hidroklorik memberhentikan fungsi amilase liur

II. Colon is the part where the small intestine joins with the large intestine.
Kolon adalah bahagian dimana usus kecil bertemu dengan usus besar

III. Bile emulsifies fats by breaking up large globules of fats into small fat droplet to increase the surface area for the action of the enzyme lipase.
Hempedu membaur lemak dengan memecahkan komposisi lemak yang besar kepada komposisi kecil bagi meningkatkan luas permukaan untuk enzim lipes berfungsi

IV. Vitamin B12 deficiency caused less red blood cells to transport oxygen
Kekurangan vitamin B12 menyebabkan kurang sel darah merah yang mengangkut oksigen

A. I, II, III, IV
B. I, III, IV
C. I, II, III
D. II, III, IV

CLO2 C2

8. Ileum is the rest of the small intestine after the duodenum. Which of the following is a **FALSE** statement of ileum?
*Ileum adalah bahagian usus kecil selepas duodenum. Antara kenyataan dibawah yang manakah **SALAH** mengenai ileum?*

A. Intestinal juice contains the enzymes erepsin (peptidase), sucrose, maltase, lactase and lipase.
Jus usus mengandungi enzim erepsin (peptides), sukros, maltes, laktes and lipes

B. The lining of the intestine is greatly folded to increase the surface area for absorption.
Lapisan usus adalah berlipat secara berganda bagi meningkatkan luas prmukaan untuk penyerapan

C. It is long and coiled to increase the surface area for absorption.
Usus adalah panjang dan bergulung bagi meningkatkan luas prmukaan untuk penyerapan

D. Digestion of fats start in the ileum
Penghadaman lemak bermula di ileum

CLO1 C1

9. Breathing is the exchange of gases between the organism and the environment. Which of the following does not involved in human respiratory system?
Pernafasan adalah proses pertukaran gas antara organism dan persekitaran. Antara manakah tidak terlibat di dalam system pernafasan manusia?

A. esophagus
esophagus
B. bronchiol
bronkiol
C. nasal cavity
nasal cavity
D. pharynx
farinks

CLO1 C2

10. The lining on the wall of trachea helps to trap dust and microorganism in the air inhaled from the atmosphere. Which of the following cells are found at the wall lining of the trachea?
Lapisan dinding trakea membantu memerangkap habuk dan mikroorganisma dari udara atmosfera. Antara manakah sel yang terdapat pada lapisan dinding trakea?

i. ciliated epithelial cells
sel epitilia bersilia
ii. goblet cells
sel goblet
III. microvillus
mikrovilus
IV. flagellated epithelial cells
sel eipitilia berflagela

A. II, III
B. I,II
C. III, IV
D. I.IV

Pulmonary Gas Exchange

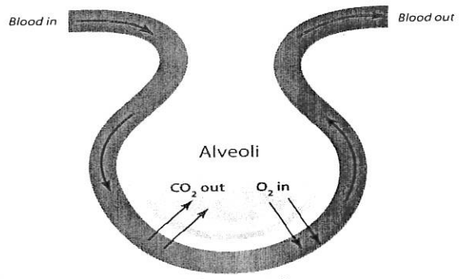

Diagram 1

CLO2 C2

11. In humans, gaseous exchange occurs across the surface of the alveolus and blood capillaries in the lungs. As referred to Diagram 1, oxygen in the alveolus will diffused into blood capillaries when partial pressure of :
Di dalam badan manusia, pertukaran gas berlaku antara permukaan alveolus dan kapilari darah didalam paru-paru. Merujuk kepada Diagram *1, oksigen didalam alveolus akan masuk ke kapilari darah apabila tekanan separa :*

A. Oxygen in blood capillaries are high and carbon dioxide in alveolus are low
Oksigen di kapilari darah tinggi dan karbon dioksida di alveolus rendah

B. Carbon dioxide in blood capillaries are high and oxygen in alveolus are low
karbon dioksida di kapilari darah tinggi dan Oksigen di alveolus rendah

C. Oxygen in alveolus are high and carbon dioxide in blood capillaries are low
Oksigen di alveolus tinggi dan karbon dioksida di kapilari darah rendah

D. Oxygen in alveolus are higher than oxygen in blood capillaries
Oksigen di alveolus lebih tinggi daripada oksigen di kapilari darah

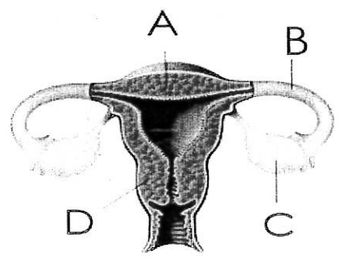

Figure 5
Gambarajah 5

CLO1 C1

12. As referred to Figure 5, which part of the female reproductive organ is matched correctly to its structure?

Merujuk pada Gambarajah 5, bahagian organ reproduksi perempuan manakah yang dipadankan dengan betul pada strukturnya?

I. A- Cervix
A- Servik

II. B- Fallopian tube
B- Tiub Fallopian

III. C- Ovary
C- Ovari

IV. D- Uterus
D- Uterus

A. I, II

B. II, III

C. I , III

D. III , IV

CLO1 C1

13. All organisms carry out reproduction, growth and development to ensure the continuity of life. As referred to Figure 5, the fertilization between an ovum and a sperm took place in the :
Semua organism melalui proses reproduksi, tumbesaran dan perkembangan bagi memastikan kemandirian. Merujuk kepada Gambarajah 6, persenyawaan antara ovum dan sperma berlaku di dalam :

A. A

B. B

C. C

D. D

CLO2 C2

14. In human, formation of gametes is important to life. What do you understand by the term oogenesis?
Pembentukan gamet adalah penting bagi kemandirian manusia. Apakah yang anda faham tentang ooenesis?

A. The implantation of blastocyst on the uterus
Implantasi blastosis pada uterus

B. The sperm formation in testis
Pembentukan sperma dalam testis

C. The release of ovum by ovary
Pelepasan ovum dari ovary

D. The ovum formation in ovary
Pembentukan ovum dalam ovary

CLO2 C2

15. Human kidneys are bean-shaped and located at the back of the abdominal cavity. Which of the following is NOT the function of kidney?
Buah pinggang manusia berbentuk kacang dan terletak di belakang rongga abdomen. Antara manakah BUKAN fungsi buang pinggang?

A. keep the volume of water in your body constant
mengekalkan isipadu air di dalam badan pada tahap sekata

B. secrete hormones
mengeluarkan hormone

C. regulate blood pressure
mengawal tekanan darah

D. remove wastes
mengeluarkan bahan buangan

CLO2
C1

16. The filtrate that is drained into the pelvis of the kidney is called urine and will be excreted through the urethra.What are the main component of urine?
Kandungan yang telah ditapis di buah pinggang pada pelvik dipanggil air kencing dan akan keluar melalui urethra. Apakah komponen utama dalam air kencing?

A. Water , urea, carbon dioxide
Air, urea, karbon dioksida

B. Water , urea, bilirubin
Air, urea, bilirubin

C. Water , urea, bile
Air, urea, jus hempedu

D. Water , urea, ammonia
Air, urea, ammonia

CLO2
C2

17. The kidneys help maintain pH balance by
Buah pinggang mengekalkan keseimbangan pH dengan

A. dissolving the calcium and sodium crystals in the urine
melarutkan kasium dan kristal sodium dalam urin

B. removing bicarbonate ions from the blood
mengasingkan ion bikarbonat dari darah

C. adding soda lime to the filtrate
menambah soda limau ke dalam kandungan yang ditapis

D. removing hydrogen ions from the blood
mengasingkan ion hydrogen dari darah

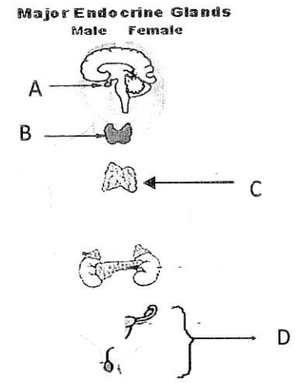

Figure 6
Gambarajah 6

CLO1
C1

18. As referred to Figure 6, the endocrine system consists of several glands located in various parts of the body. Which is the body's 'master gland' ?
Berdasarkan pada Gambarajah 6, *sistem endokrin mempunyai beberapa kalenjar yang terletak di beberapa bahagian badan. Antara manakah adalah 'kalenjar utama' badan manusia?*

CLO1
C1

19. Based on Figure 6, the organ that are both reproductive organs and endocrine glands are
Berdasarkan pada Gambarajah 6, *organ yang merupakan organ reproduktif dan kalenjar endokrin adalah*

CLO2
C2

20. The thyroid gland produce thyroxine hormone that controls growth and development in human. What is the deformation due to lack of thyroxine?
Kalenjar tiroid menghasilkan hormon tiroxin yang mengawal tumbesaran dan perkembangan manusia. Apakah deformasi yang berlaku akibat kekurangan tiroxin?

A. Goitre
Goiter

B. Anaemia
Anaemia

C. Night blindness
Rabun malam

D. Kwashiorkor
Kwashiorkor

SECTION B : 30 MARKS
BAHAGIAN B : 30 MARKAH

INSTRUCTION:
This section consists of **TEN (10)** structured questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **SEPULUH (10)** soalan berstruktur. Jawab semua soalan.*

CLO1
C2

QUESTION 1

Cilia, flagella and microvilli are found only in animal cells. Describe the difference between cilia, flagella and villi.

SOALAN 1

Silia, flagella dan milrovili hanya dijumpai pada sel haiwan. Jelaskan perbezaan antara cilia, flagella dan vili.

[3 marks]
[*3 markah*]

CLO1
C2

QUESTION 2

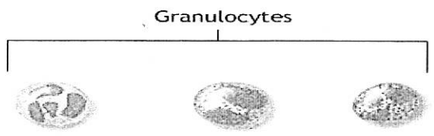

Figure 7
Gambarajah 7

There are three types of granulocytes. Name and briefly describe the characteristics between the respective granulocytes.

SOALAN 2

Terdapat tiga jenis granulosit. Namakan dan jelaskan secara rigkas ciri-ciri bagi setiap granulosit.

[3 marks]
[*3 markah*

CLO2
C2

QUESTION 3

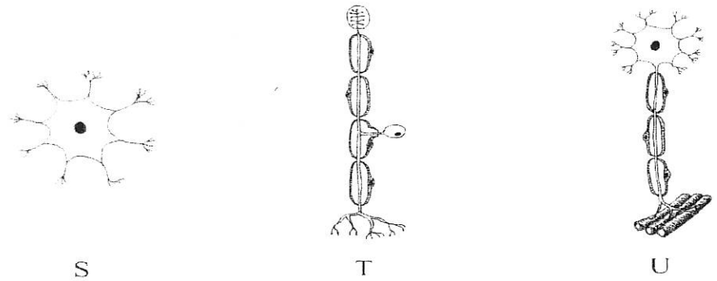

Figure 8
Gambarajah 8

The nervous system consists of nerve cells called neurons. Based on Figure 8 describe the functions of the neurons S, T and U:

SOALAN 3

Sistem saraf terdiri daripada sel saraf atau neuron. Berdasarkan Gambarajah 8 jelaskan fungsi neuron S, T dan U:

[3 marks]
[*3 markah*]

CLO2
C2

QUESTION 4

Bile is produced by the liver, stored and released from the gall bladder. Describe **THREE** functions of bile

SOALAN 4

*Jus hempedu dihasilkan di hati, disimpan dan dilepaskan dari pundi hempedu. Jelaskan **TIGA** fungsi jus hempedu*

[3 marks]
[*3 markah*]

CLO2
C2

QUESTION 5

Breathing is the exchange of gases between the organism and the environment. In table form, describe the difference between inhalation and exhalation for the following part of respiratory system:

i. intercostal muscle
ii. rib cage
iii. diaphragm and diaphragm muscle

SOALAN 5

Pernafasan adalah pertukaran gas antara organism dan persekitaran. Jelaskan perbezaan antara menarik nafas dan meghembus nafas bagi beberapa bahagian system respirasi berikut:

i. otot intekostal
ii. sangkar rusuk
iii. diafragma dan otot diafragma

[3 marks]
[*3 markah*]

CLO1
C1

QUESTION 6

All organisms carry out reproduction, growth and development to ensure the continuity of life. Define the following terms :

i. Oogenesis
ii. Menstruation

SOALAN 6

Semua organism menjalankan reproduksi, tumbesaran dan perkembangan bagi memastikan kemandirian hidup. Jelaskan maksud berikut :

i. Oogenesis
ii. Menstruasi

[3 marks]
[*3 markah*]

CLO1
C2

QUESTION 7

Menstruation and ovulation in the menstrual cycle are the signs of maturity and fertility in females. Describe the importance of menstrual cycle

SOALAN 7

Menstruasi dan ovulasi dalam kitaran menstruasi adalah tanda kematangan dan kesuburan bagi wanita. Jelaskan kepentingan kitaran menstruasi.

[3 marks]
[*3 markah*]

CLO2
C2

QUESTION 8

Homeostasis occurs in the kidneys in order to maintain a dynamic equilibrium. Briefly describe how the kidneys regulate and maintain osmotic pressure in blood.

SOALAN 8

Homeostasis berlaku di dalam buah pinggang bagi mengekalkan keseimbangan dinamik. Jelaskan secara ringkas bagaimana buah pinggang mengawal dan mengekalkan tekanan osmotik dalam darah.

[3 marks]
[*3 markah*]

CLO2
C2

QUESTION 9

One of the main functions of kidney is to carry out the process of excretion. Explain briefly what happens during the THREE stages of urine formation.

i. Ultrafiltration
ii. Reabsorbtion
iii. Secretion

SOALAN 9

Salah satu fungsi utama buah pinggang adalah menjalankan proses perkumuhan. Terangkan secara ringkas apa yang berlaku semasa TIGA peringkat penghasilan urin.

i. Ultrafiltrasi
ii. Penyerapan semula
iii. Rembesan

[3 marks]
[*3 markah*]

CLO2
C2

QUESTION 10

The endocrine system regulates the activities in the body via hormones. In table form describe THREE aspects of coordination via hormonal control.

SOALAN 10

Sistem endokrin mengawalatur aktiviti dalam badan melalui hormone. Jelaskan TIGA aspek koordinasi kawalan hormone dalam bentuk jadual.

[3 marks]
[*3 markah*]

SECTION C : 50 MARKS
BAHAGIAN C : 50 MARKAH

INSTRUCTION:
This section consists of **TWO (2)** essay questions. Answer **ALL** questions.

ARAHAN:
*Bahagian ini mengandungi **DUA (2)** soalan esei. Jawab semua soalan.*

QUESTION 1
SOALAN 1

CLO1
C2

a) The human brain is considered as a coordinating and integrating centre. Explain the functions of human brain.

(5 marks)

a) Otak manusia dianggap sebagai pusat koordinasi dan integrasi. Terangkan fungsi otak manusia.

(5 markah)

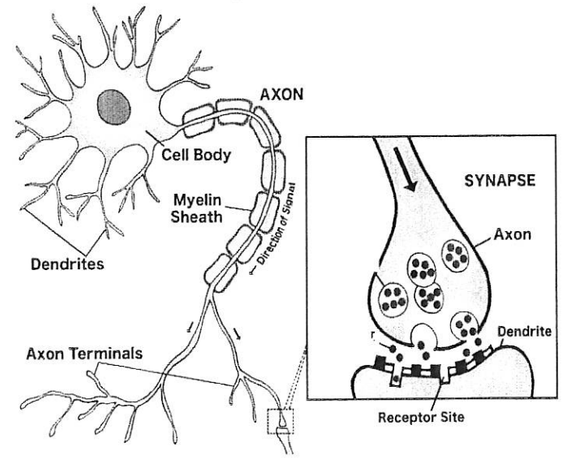

Diagram 2

b) Axons branch out and end near dendrites of neighboring cells.

CLO1
C1

i. Define the terms synapse

(2 marks)

CLO2
C2

ii. Based on diagram 2, explain the transmission of information across synapse.

(6 marks)

b) Axon bercabang dan berakhir berdekatan dendrit cell bersebelahan.

i. Jelaskan maksud sinaps

(2 markah)

ii. Berdasarkan diagram 2, terangkan penghantaran informasi melaui sinaps.

(6 markah)

CLO2
C2

c) There are two main kinds of actions that our body carries out; voluntary actions and involuntary actions. Explain the differences between both actions.

(12 marks)

c) Terdapat dua jenis pergerakan yang dilakukan oleh badan kita; pergerakan terkawal dan pergerakan luar kawal. Terangkan perbezaan di antara dua jenis pergerakan ini.

(12 markah)

QUESTION 2

SOALAN 2

CLO2
C2

a) All organisms carry out reproduction, growth and development to ensure the continuity of life. Explain the function of

i. male reproductive system
ii. female reproductive system

(5 marks)

a) Semua organism menjalankan reproduksi, tumbesaran dan perkembangan bagi memastikan kemandirian hidup. Terangkan fungsi utama

i. sistem reproduktif lelaki
ii. system reproduktif wanita

(5 markah)

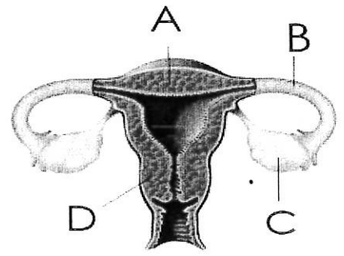

Figure 9
Gambarajah 9

b) Figure7 shows the female reproductive organ.

CLO1
C1

i. Name the structure of A, B, C and D

(2 marks)

CLO2
C2

ii. Explain the process of fertilization that occur in B

(8 marks)

b) Gambarajah 7 menunjukkan organ reproduktif perempuan

i. Namakan struktur A, B, C dan D

(2 markah)

ii. Terangkan proses fertilasi yang berlaku di B

(8 markah)

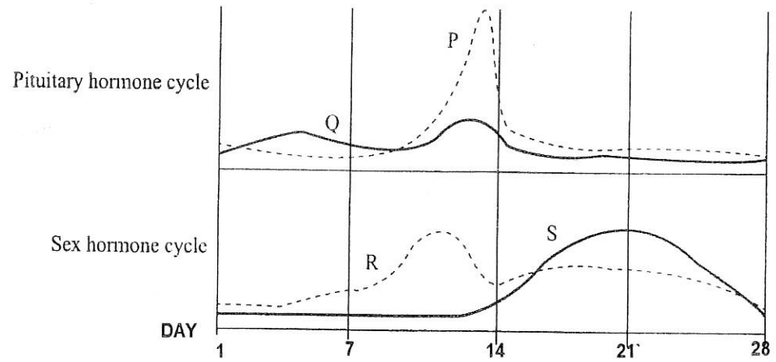

Diagram 3

CLO2
C2

c) Diagram 3 shows the changes of four types of hormones which control the menstrual cycle. Name and explain the hormone level of P, Q, R and S during the whole cycle of menstruation.

(10 marks)

c) Diagram 3 menunjukkan perubahan 4 jenis hormone yang mengawal kitaran menstruasi. Namakan dan terangkan paras hormon P, Q, R dan S *semasa keseluruhan kitaran menstruasi.*

(10 markah)

SOALAN TAMAT