

**SULIT**



**BAHAGIAN PEPERIKSAAN DAN PENILAIAN  
JABATAN PENDIDIKAN POLITEKNIK  
KEMENTERIAN PENDIDIKAN TINGGI**

**JABATAN KEJURUTERAAN ELEKTRIK**

**PEPERIKSAAN AKHIR**

**SESI DISEMBER 2016**

**DEU 3193 : ANATOMY & PHYSIOLOGY**

**TARIKH : 09 APRIL 2017**

**TEMPOH : 2.30 PM – 4.30 PM ( 2 JAM )**

---

Kertas ini mengandungi **TIGA BELAS (13)** halaman bercetak.

Bahagian A: Objektif (10 soalan)

Bahagian B: Struktur (4 soalan)

Bahagian C: Esei (2 soalan)

Dokumen sokongan yang disertakan : Tiada

---

**JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN**

(CLO yang tertera hanya sebagai rujukan)

**SULIT**

**SECTION A : 10 MARKS****BAHAGIAN A : 10 MARKAH****INSTRUCTION:**

This section consists of **TEN (10)** objective questions. Mark your answers in the OMR form provided.

**ARAHAN :**

*Bahagian ini mengandungi **SEPULUH (10)** soalan objektif. Tandakan jawapan anda di dalam borang OMR yang disediakan.*

CLO1  
C1

1. Cell is the basic functional unit of all living things. Identify the main difference between animal and plant cell.

*Sel adalah unit asas bagi fungsi semua benda hidup. Tentukan perbezaan utama antara sel haiwan dan tumbuhan.*

- A. Animal cell lack of rigid cell wall  
*Sel haiwan tiada dinding sel tegar*
- B. Animal cell consist of vacuoles  
*Sel haiwan mempunyai vakuol*
- C. Plant cell lack of rigid cell wall  
*Sel tumbuhan tiada dinding sel tegar*
- D. Plant cells consist of small vacuoles  
*Sel tumbuhan mempunyai vakuol yang kecil*

CLO1  
C1

2. Organelles are found only in eukaryotic cells .The termed of rough endoplasmic reticulum is given because it has an abundance of \_\_\_\_\_ on it.

*Organel hanya dijumpai di dalam sel eukaryotik. Istilah bagi endoplasma retikulum kasar diberikan kerana ia mempunyai banyak \_\_\_\_\_ di atasnya.*

- A. Mitochondria  
*Mitochondria*
- B. Lysosomes  
*Lisosom*
- C. Ribosomes  
*Ribosom*
- D. Golgi bodies  
*Badan Golgi*

CLO1  
C3

3. Any wound that does not heal within a few weeks should be examined. Choose the **CORRECT** consequence when people who experience an open wound in which their blood does not clot naturally?

*Sebarang luka yang tidak sembuh dalam beberapa minggu perlu diperiksa. Pilih akibat yang **BENAR** apabila seseorang mengalami luka terbuka dan di mana darah mereka tidak membeku secara semulajadi?*

- A. The person may bleed to death.  
*Mereka mungkin akan mati akibat pendarahan*
- B. Nothing. Clotting is not important.  
*Tiada apa yang berlaku. Pembekuan tidak penting*
- C. They would have to take regular doses of plasma.  
*Mereka terpaksa mengambil dos plasma secara tetap*
- D. They would have to take regular doses of platelets.  
*Mereka terpaksa mengambil dos platelet secara tetap*

CLO1  
C3

4. Reflex action is an automatic reaction towards stimuli. Choose the **CORRECT** following statement of reflex arch.

*Aksi reflek adalah reaksi automatik terhadap rangsangan. Pilih kenyataan yang **BENAR** bagi satu arka reflek.*

- A. Brain → Spinal Cord → Muscle  
*Otak → Tulang Belakang → Otot*
- B. Muscle → Receptor → Brain  
*Otot → Reseptor → Otak*
- C. Muscle → Spinal Cord → Brain  
*Otot → Tulang Belakang → Otak*
- D. Receptor → Spinal Cord → Muscle  
*Reseptor → Tulang Belakang → Otot*

CLO1  
C1

5. The human digestive system converts food into nutrients that the body needs. Identify the organ that produces bile?

*Sistem pencernaan manusia menukarkan makanan kepada nutrisi yang diperlukan tubuh. Kenalpasti organ yang menghasilkan hempedu?*

- A. Gallbladder  
*Pundi hempedu*
- B. Liver  
*Hati*
- C. Stomach  
*Perut*
- D. Large intestine  
*Usus besar*

CLO1  
C2

6. Human body needs automatic control system for cells to function properly. Identify the best description of homeostasis?

*Tubuh manusia memerlukan sistem kawalan automatik supaya sel boleh berfungsi dengan baik. Kenalpasti deskripsi terbaik bagi homeostasis?*

- A. It controls temperature of environment  
*Ia mengawal suhu persekitaran*
- B. It controls water and ions level  
*Ia mengawal air dan paras ion*
- C. It is not dependant of the external environment  
*Ia tidak bergantung kepada persekitaran luaran*
- D. It maintains constant internal environment  
*Ia mengekalkan persekitaran dalaman yang tetap*

CLO1  
C2

7. Diagram A7 shows a small part of human lung exchange of gases takes place. In the options given below, determine the **CORRECT** part with its function for the following statement.

*Gambarajah A7 menunjukkan sebahagian kecil paru-paru manusia yang mana berlakunya pertukaran gas. Antara pilihan yang diberikan di bawah, tentukan bahagian dengan fungsi yang **BETUL** bagi kenyataan berikut .:*

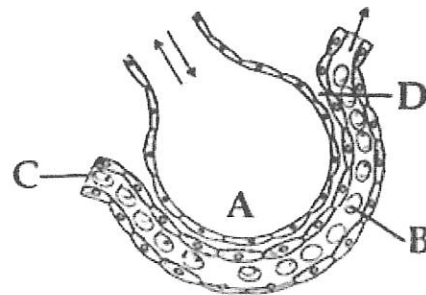


Diagram A7  
Gambarajah A7

- A. red blood cell –transport CO<sub>2</sub>  
*sel darah merah- mengangkut CO<sub>2</sub>*
- B. arterial capillary - passes oxygen to tissues  
*kapilari arteri – membawa oksigen ke tisu*
- C. alveolar cavity - main site of exchange of respiratory gases  
*ruang alveolar – tapak utama pertukaran gas respirasi*
- D. capillary wall - exchange of O<sub>2</sub> and CO<sub>2</sub> takes place here  
*dinding kapilari – pertukaran O<sub>2</sub> dan CO<sub>2</sub> berlaku di sini*

CLO1  
C2

8. The female reproductive system is made up of internal organs external structures. Based on your understanding, select the **TRUE** statement about uterus.

*Sistem reproduktif wanita terdiri daripada struktur luaran organ dalaman. Berdasarkan kefahaman anda, pilih kenyataan yang **BENAR** mengenai uterus.*

- A. It becomes the placenta when the fetus is big enough.  
*Ia menjadi plasenta apabila fetus telah besar*
- B. It is connected to both the Fallopian tube and the vagina.  
*Ia terhubung dengan tiub Fallopian dan vagina*
- C. It is an endocrine gland secreting progesterone  
*Ia adalah kelenjar endokrin yang merembeskan progesterone*
- D. It produces the eggs and is the site for fertilization.  
*Ia menghasilkan telur dan adalah tapak untuk persenyawaan*

CLO1  
C1

9. The end product of all processes of urine formation is urine. Three interrelated processes of urine formation are

*Produk akhir bagi semua proses formasi urin adalah urin. Tiga pròses penghasilan urin yang saling berkaitan adalah*

- A. filtration, secretion, and excretion  
*filtrasi, rembesan dan perkumuhan*
- B. secretion, reabsorption, and storage  
*rembesan, penyerapan semula dan simpanan*
- C. excretion, storage, and filtration  
*perkumuhan, simpanan dan filtrasi*
- D. filtration, reabsorption, and secretion  
*filtrasi, penyerapan semula dan rembesan*

CLO1  
C2

10. The urinary system is also known as the renal system. Identify **FALSE** statement on the function of the kidneys.

*Sistem urinari juga dikenali sebagai sistem renal. Tentukan kenyataan yang **SALAH** bagi fungsi ginjal.*

- A. Production and release of calcitriol and erythropoietin.  
*Produksi dan pelepasan kasitriol dan eritropoietin.*
- B. Storage of urine.  
*Simpanan urin.*
- C. Regulation of blood composition and pH.  
*Regulasi komposisi darah dan ph.*
- D. Maintenance of blood osmolarity.  
*Menetapkan osmolariti darah.*

## SECTION B : 60 MARKS

## BAHAGIAN B : 60 MARKAH

## INSTRUCTION:

This section consists of **FOUR (4)** structured questions. Answer **ALL** questions.

## ARAHAN:

Bahagian ini mengandungi **EMPAT(4)** soalan berstruktur. Jawab **SEMUA** soalan.

## QUESTION 1

## SOALAN 1

- a) Organelles are found in eukaryotic cells. State **ONE(1)** function for each of the organelles stated below.

*Organel hanya dijumpai di dalam sel eukaryotik. Nyatakan **SATU(1)** fungsi bagi setiap organel yang dinyatakan di bawah.*

- i. Cell wall  
*Dinding sel*
- ii. Smooth endoplasmic reticulum  
*Endoplasmik retikulum halus*
- iii. Mitochondria  
*Mitokondria*

[3 marks]

[3 markah]

- b) Passive transport moves substances down to the concentration gradient. Determine **FIVE (5)** factors that will affect the rate of diffusion.

*Pengangkutan pasif menggerakkan bahan mengikut kecerunan kepekatan. Tentukan **LIMA (5)** faktor yang akan mempengaruhi kadar penyerapan.*

[5 marks]

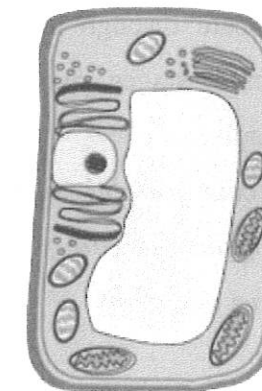
[5 markah]

CLO1  
C1CLO1  
C2CLO1  
C3

- c) Osmosis is the diffusion of water in and out of the cell. **Diagram B1(c)** shows an example of a plant cell. Illustrate the effect of osmosis when plant cells are placed in the solution stated below with the aid of a diagram and proper labelling :

*Osmosis adalah resapan air masuk dan keluar sel. **Gambarajah B1(c)** menunjukkan contoh sel tumbuhan. Gambarkan kesan osmosis apabila sel tumbuhan diletakkan ke dalam larutan yang dinyatakan dibawah dengan bantuan gambarajah dan label yang sesuai:*

- i. hypertonic solution  
*larutan hipertonik*
- ii. hypotonic solution  
*larutan hipotonik*
- iii. isotonic solution  
*larutan isotonik*



**Diagram B1(c)**  
**Gambarajah B1(c)**

[7 marks]

[7 markah]

## QUESTION 2

## SOALAN 2

CLO1  
C1

- a) The brain is the central part of the nervous system. Describe **THREE(3)** different functions of the human brain.

*Otak adalah bahagian utama sistem saraf. Jelaskan TIGA(3) fungsi berbeza bagi otak manusia*

[3 marks]

[3 markah]

CLO1  
C3

- b) The nervous system consists of nerve cells called neuron. Illustrate **FIVE(5)** main parts of a neuron and their respective functions.

*Sistem saraf mengandungi sel saraf yang dinamakan neuron. Gambarkan LIMA(5) bahagian utama bagi satu neuron dan fungsi masing-masing.*

[5 marks]

[5 markah]

CLO1  
C4

- c) Neurons communicate through an electrical signal called the action potential. Illustrate the different stages involved in the whole process with the aid of an action potential graph.

*Neuron berkomunikasi melalui isyarat elektrik yang dipanggil potensi tindakan. Gambarkan peringkat berbeza yang melibatkan keseluruhan proses dengan bantuan graf potensi tindakan.*

[7 marks]

[7 markah]

## QUESTION 3

## SOALAN 3

CLO2  
C1

- a) Gaseous exchange occurs across the surface of the alveolus and blood capillaries in the lungs. State **THREE(3)** adaptation of alveolus for gaseous exchange.

*Pertukaran gas berlaku di sepanjang permukaan alveolus dan kapilari darah di dalam paru-paru. Nyatakan TIGA(3) adaptasi alveolus bagi pertukaran gas.*

[3 marks]

[3 markah]

CLO2  
C2

- b) Breathing is a mechanical process of inhalation and exhalation. Determine the effect of each structure stated below during the exhalation process.

*Pernafasan merupakan proses mekanikal menarik nafas dan menghembus nafas. Tentukan kesan setiap struktur yang dinyatakan dibawah semasa proses menghembus nafas.*

- i. Intercostal muscle

*Otot intercostal*

- ii. Ribcage

*Tulang rusuk*

- iii. Volume of thoracic cavity

*Isipadu kaviti toraks*

- iv. Diaphragm muscle

*Otot diafragma*

- v. Air pressure in thoracic cavity

*Tekanan udara di dalam kaviti toraks*

[5 marks]

[5 markah]

CLO2  
C3

- c) Chemoreceptor cell is located in human breathing center. Illustrate the regulation rate pathway of breathing by central chemoreceptors when the concentration of carbon dioxide in blood is high with the aid of a diagram.

*Sel kemoreseptor terletak di pusat pernafasan manusia. Gambarkan laluan regulasi kadar pernafasan oleh pusat kemoreseptor apabila kepekatan karbon dioksida di dalam darah adalah tinggi dengan bantuan gambarajah.*

[7 marks]  
[7 markah]

## QUESTION 4

## SOALAN 4

CLO2  
C2

- a) The major function of the reproductive system is to ensure the survival of species. Describe **THREE(3)** importance of gamete formation in human life.

*Fungsi utama bagi sistem reproduktif adalah untuk memastikan kemandirian spesies. Terangkan TIGA(3) kepentingan pembentukan gamet dalam kehidupan manusia.*

[3 marks]  
[3 markah]

CLO2  
C3

- b) The female reproductive system is made up of internal organs and external structures. Based on the physiological control of the system, list in details **FIVE(5)** functions of the female reproductive system.

*Sistem reproduktif wanita terdiri daripada organ dalaman dan struktur luaran. Berdasarkan pada kawalan fisiologi sistem tersebut, senaraikan secara terperinci LIMA(5) fungsi bagi sistem reproduktif wanita.*

[5 marks]  
[5 markah]

CLO2  
C4

- c) There are many different methods of birth control. Determine the effectiveness of **SEVEN(7)** different methods of birth control.

*Terdapat pelbagai kaedah yang berbeza bagi kawalan kehamilan. Tentukan keberkesanan bagi TUJUH(7) kaedah kawalan kehamilan yang berbeza.*

[7 marks]  
[7 markah]

## SECTION C : 30 MARKS

## BAHAGIAN C : 30 MARKAH

## INSTRUCTION:

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

## ARAHAN:

*Bahagian ini mengandungi DUA (2) soalan esei. Jawab SEMUA soalan.*

CLO2  
C3

## QUESTION 1

## SOALAN 1

- a) Blood transfusion involves compatibility testing between donor and recipient. Interpret in details the compatibility between the universal blood donors and universal blood recipients.

*Transfusi darah melibatkan ujian keserasian antara penderma dan penerima. Tafsirkan secara terperinci keserasian diantara penderma darah universal dan penerima darah universal.*

[8 marks]  
[8 markah]

- b) Rhesus factor incompatibility can cause erythroblastosis fetalis during pregnancy. Relate the condition between a mother and her baby to the rhesus factor incompatibility.

*Ketidakserasian faktor resus boleh menyebabkan eritroblastosis fetalis semasa mengandung. Kaitkan keadaan diantara ibu dan bayi pada ketidakserasian faktor resus.*

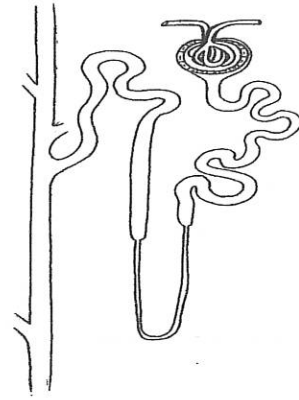
[7 marks]  
[7 markah]

## QUESTION 2

## SOALAN 2

The nephron is the basic structural and functional unit of a kidney. Based on **Diagram C2**, identify the mechanism and relationship of different parts in nephron to carry out its main functions.

*Nefron adalah struktur asas dan unit fungsi bagi buah pinggang. Berdasarkan **Diagram C2**, kenalpasti mekanisme dan hubungan bagi bahagian-bahagian berbeza dalam nefron untuk melaksanakan fungsi-fungsi utama.*



**Diagram C2**  
**Gambarajah C2**

[15 marks]

[15 markah]

SOALAN TAMAT