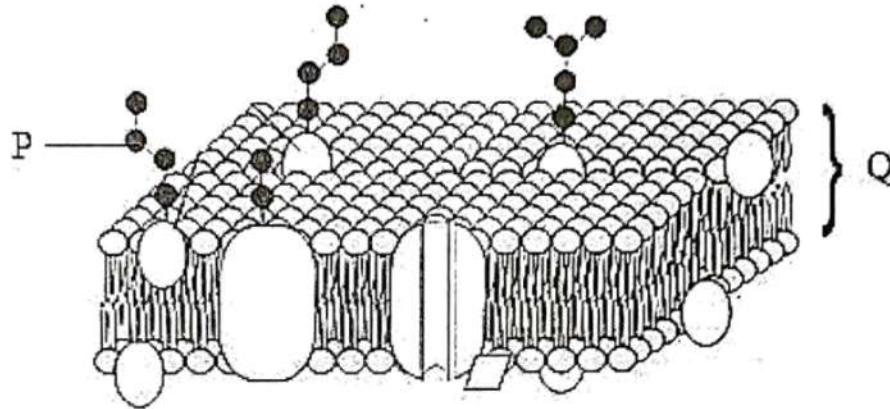


**BAHAGIAN A**  
**SECTION A**  
Jawab semua soalan  
Answer all the questions.

1. Rajah 1 menunjukkan struktur membran plasma.  
Diagram 1 shows structure of plasma membrane.



Rajah 1  
Diagram 1

- (a) (i) Nyatakan nama bahagian berlabel P dan Q  
State the name of parts labeled P and Q

1(a)(i)

2
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P: **Glikoprotein / Glycoprotein** .....

Q: **Dwilapisan fosfolipid / Phospholipid bilayer** .....

[2 markah / marks]

- (ii) P terbentuk daripada gabungan rantai karbohidrat yang melekat pada molekul protein. Nyatakan fungsi bahagian P.  
P is formed from combination of carbohydrates chain that attached to the protein molecule. State the function of P.

1(a)(ii)

1
---

P1 **Sebagai molekul reseptor untuk hormon** .....

**As receptor molecule for hormone**

P2 **Untuk menstabilkan / Menguatkan membran** .....

**To stabilise / strengthened the membrane** [1 markah / mark]

P3 **Bertindak sebagai antigen bagi pengenalpastian sel**  
**Act as antigen to cell identification**

For Examiner's Use

(b) Membran plasma mempunyai sifat separa telap kerana dibina daripada lapisan Q dan protein. Nyatakan **satu** sifat bahan yang boleh merentasi lapisan Q.

*Plasma membrane has semipermeable characteristic because it is built from layer Q and protein. State **one** characteristic of substance than able to move across layer Q.*

Molekul kecil / Larut lipid

*Small molecule / lipid soluble*

[1 markah / mark]

1(b)

1
---

(c) Larutan saline adalah sejenis larutan yang digunakan untuk merawat pesakit yang mengalami cirit birit. Terangkan mengapa.

*Saline solution is a solution used to treat diarrhea patient. Explain why.*

P1 Merupakan larutan isotonik terhadap plasma darah

*It is an isotonic solution the blood plasma*

P2 Mengembalikan kehilangan air / elektrolit daripada badan pesakit

*Return water / electrolyte loss from patient's body*

P3 Pesakit mengalami penghidratan semula

*Patient undergoes rehydration*

[2 markah / marks]

1(c)

2
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t.me/cikgufazliebiosensei

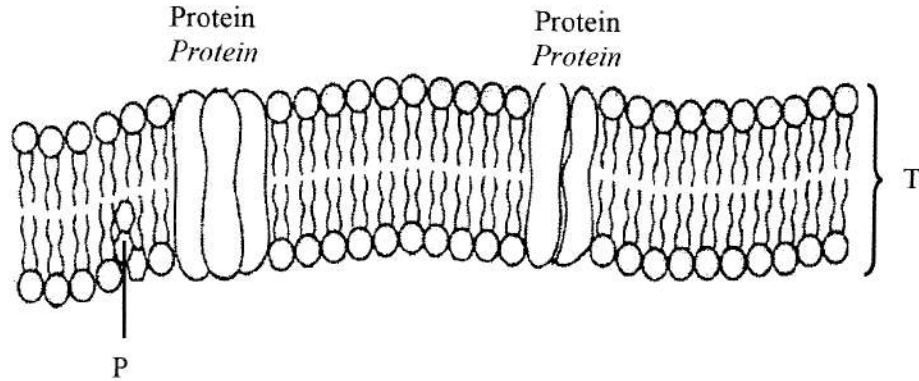
Total

6
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[60 markah]  
[60 marks]

Jawab **semua** soalan dalam bahagian ini.  
Answer **all** questions in this section.

- 1 Rajah 1 menunjukkan satu membran struktur membran plasma.  
Diagram 1 shows a model of the structure of plasma membrane.



Rajah 1  
Diagram 1

- (a)(i) Berikan nama model membran plasma dalam Rajah 1.  
Name the model of plasma membrane in Diagram 1.

**Mozeq mozeq bendalir / Fluid mosaic model**

[1 markah ]  
[1 mark]

- (ii) Labelkan P dan T.  
Label P and T.

P: **Kolesterol / Cholesterol**

T: **Dwilapisan fosfolipid / Phospholipid bilayer**

[2 markah ]  
[2 marks]

- (b)(i) Terangkan satu ciri bahagian T.  
Explain one characteristic of part T.

F1 **Bahagian kepala berkutub bersifat hidrofilik**  
**A polar head which is hydrophilic**

P1 **Tertarik kepada air / Attracted to water**

F2 **Bahagian ekor tidak berkutub bersifat hidrofobik**  
**A nonpolar tail which is hydrophobic**

P2 **Tidak tertarik kepada air / Repels water**

[ 2 markah ]  
[ 2 marks ]

- (c) Nyatakan kepentingan struktur P kepada membran plasma.  
State one importance of structure P to plasma membrane.

P1 **Menjadikan dwilapisan fosfolipid kuat // lebih fleksibel // kurang telap**  
**terhadap bahan larut air / ion**

**Make the phospholipid bilayer stronger // more flexible // less permeable to**  
**water-soluble substance / ion**

P2 **Menjadikan membran plasma lebih fleksibel**  
**Make the plasma membrane more flexible**

[ 1 markah ]  
[ 1 mark ]

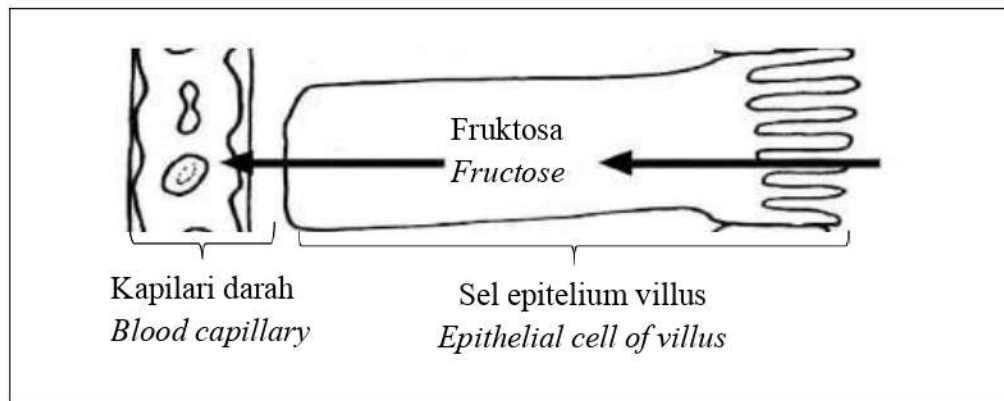
**Bahagian A**

[60 markah]

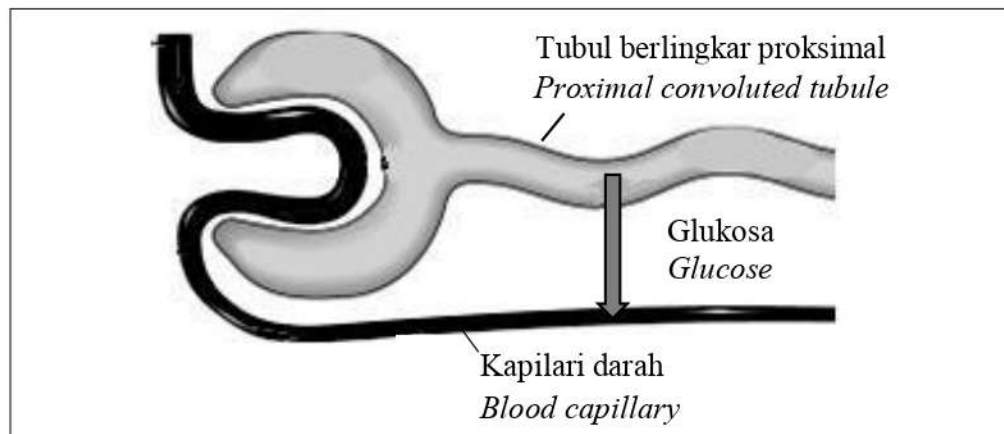
Jawab **semua** soalan.

- 1 Rajah 1.1 (a) dan Rajah 1.1 (b) menunjukkan dua jenis pengangkutan dalam organisma hidup.

*Diagrams 1.1 (a) and 1.1 (b) show two types of transport in living organisms.*



Rajah 1.1 (a) / *Diagram 1.1 (a)*



Rajah 1.1 (b) / *Diagram 1.1 (b)*

- (a) (i) Namakan jenis pengangkutan dalam Rajah 1.1 (a) dan 1.1 (b).

*Name the type of transport in Diagram 1.1 (a) and 1.1 (b).*

**Pengangkutan pasif / Resapan berbantu**

Rajah 1.1 (a) : **Passive transport / Facilitated diffusion** .....

Diagram 1.1 (a) **Pengangkutan aktif**

Rajah 1.1 (b) : **Active transport** .....

Diagram 1.1 (b)

[2 markah / marks]

- (ii) Berikan dua perbezaan antara dua jenis pengangkutan yang dinamakan di 1(a)(i).

*Give two differences between the types of transport named in 1(a) (i).*

Rajah 1.1 (a) <i>Diagram 1.1 (a)</i>	Rajah 1.1 (b) <i>Diagram 1.1 (b)</i>
Berlaku mengikut kecerunan kepekatan <i>Occurs following the concentration gradient</i>	Berlaku menentang kecerunan kepekatan <i>Occurs against the concentration gradient</i>
Tidak memerlukan tenaga <i>Does not require energy</i>	Memerlukan tenaga <i>Requires energy</i>

[2 markah / marks]

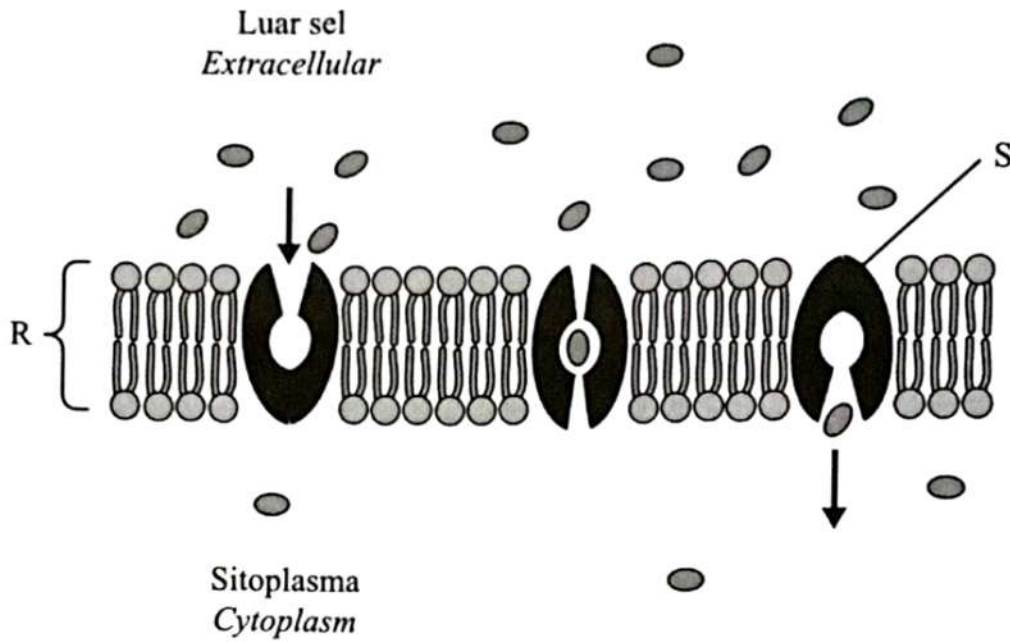
Berlaku sehingga keseimbangan dinamik dicapai  
*Occurs until a dynamic equilibrium is achieved*

Berlaku pengumpulan dan penyingkiran molekul / ion  
*There are accumulation and disposal of molecules / ions*

1(a)(ii)

	2
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2 Rajah 2 menunjukkan pergerakan bahan merentasi membran plasma.  
*Diagram 2 shows movement of substances across the plasma membrane.*



Rajah 2  
*Diagram 2*

(a) (i) Namakan struktur R dan S.  
*Name structure R and S.*

R : *Dwilapisan fosfolipid / Phospholipid bilayer*

S : *Protein pembawa / Carrier protein*

[2 markah]  
[2 marks]

(ii) Namakan proses pergerakan bahan merentasi membran plasma dalam Rajah 2.

*Name the process of the movement of substances across the plasma membrane in Diagram 2.*

*Resapan berbantu / Facilitated diffusion*

[1 markah]  
[1 mark]

2(a)(i)

2

2(a)(ii)

1

- (b) Nyatakan satu perbezaan di antara proses pengangkutan yang berlaku pada R dan S.

*State one difference between the transport process which occur at R and S.*

Pengangkutan di R melibatkan molekul larut lipid (asid lemak / gliserol) /

air / oksigen / karbon dioksida manakala pengangkutan di S melibatkan

bahan tidak larut lipid / molekul bersaiz besar (glukosa / asid amino)

*Transport at R involves lipid soluble molecules (fatty acids / glycerol) /*

*water / oxygen / carbon dioxide while transport at S involves*

*lipid-insoluble molecules / large molecules (glucose / amino acids)*

[1 markah]

[1 mark]

2(b)

	1
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- (c) Negara T mempunyai sumber air tawar yang rendah di dunia namun dikelilingi oleh laut.

Cadangkan langkah yang boleh diambil bagi menghasilkan air minuman tulen daripada sumber air laut menggunakan membran telap memilih.

Terangkan langkah tersebut.

*Country T has low fresh water source but surrounded by sea.*

*Suggest the step that can be taken to produce pure drinking water from the sea water source using selectively permeable membrane.*

*Explain the step.*

P1 Teknologi osmosis berbalik / Proses penyahgaraman

*Reverse osmosis technology / Desalination process*

P2 Tekanan dikenakan ke atas air laut (melalui membran telap memilih)

*Pressure is applied to push the seawater (through a semi-permeable membrane)*

P3 Membran ini membenarkan molekul air melaluinya

*The membrane allows water molecules to pass through*

P4 Zarah bendasing / garam / mikroorganisma dihalang

*Foreign particles / Salt / Microorganisms are not allowed*

[2 markah]

[2 marks]

2(c)

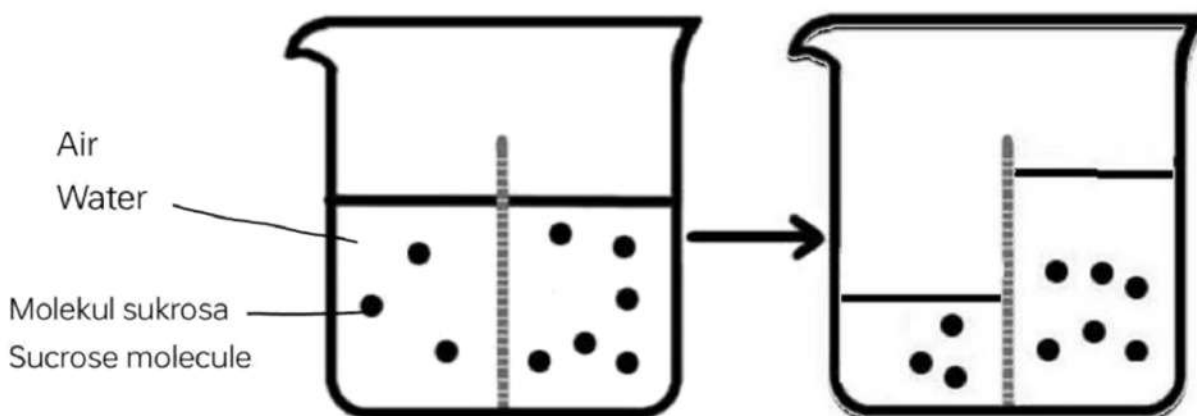
	2
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Total  
A2

	6
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2. Rajah 2.1 menunjukkan dua larutan yang dipisahkan oleh membran separa telap.  
*Diagram 2.1 shows two solutions separated by a semi-permeable membrane.*



Rajah 2.1(a)/Diagram 2.1(a)

Rajah 2.1(b)/Diagram 2.1(b)

- (a) (i) Pada Rajah 2.1(b), lukiskan aras **kedua-dua** larutan tersebut selepas keseimbangan dinamik tercapai.

*In Diagram 2.1(b), draw the level of **both** solutions after dynamic equilibrium is achieved.*

[1 markah/mark]

- (ii) Rajah 2.2 menunjukkan keadaan suatu sel darah merah selepas direndam dalam suatu larutan.

*Diagram 2.2 shows the condition of a red blood cell after being immersed into a solution.*



Rajah 2.2 / Diagram 2.2

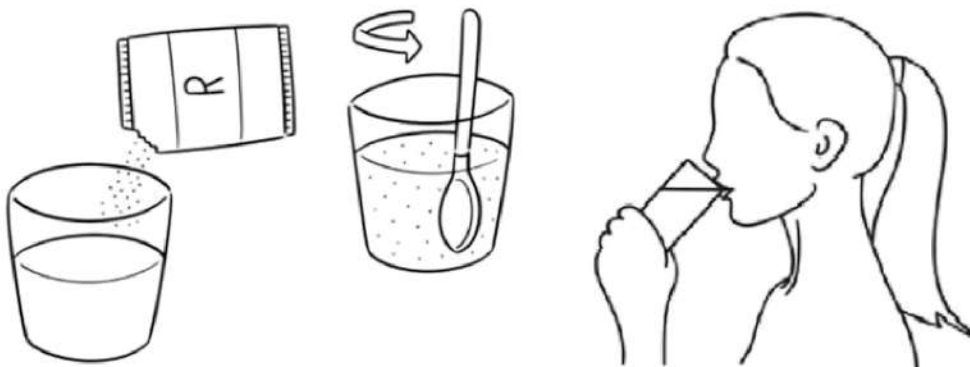
Terangkan apa yang berlaku kepada sel darah merah tersebut.

*Explain what happens to the red blood cell.*

- P1 Sel darah merah direndam dalam larutan hipertonik / *The red blood cell is immersed in hypertonic solution*  
 P2 Molekul air meresap keluar dari sel darah merah secara osmosis .....  
*Water molecules are diffused out from the red blood cell through osmosis*.....  
 P3 Sel darah merah mengecut / *The red blood cell is shrunk*  
 P4 Sel darah merah mengalami krenasi / *The red blood cell undergoes crenation* [2 markah/marks]

- (b) Puan B mengalami cirit-birit. Doktor yang merawatnya telah memberikan sejenis garam R.

*Puan B has diarrhoea. The doctor who treated her, has prescribed her salt R.*



Rajah 2.3 / Diagram 2.3

Nyatakan nama garam R dan huraikan bagaimana garam R membantu mengurangkan kesan cirit-birit.

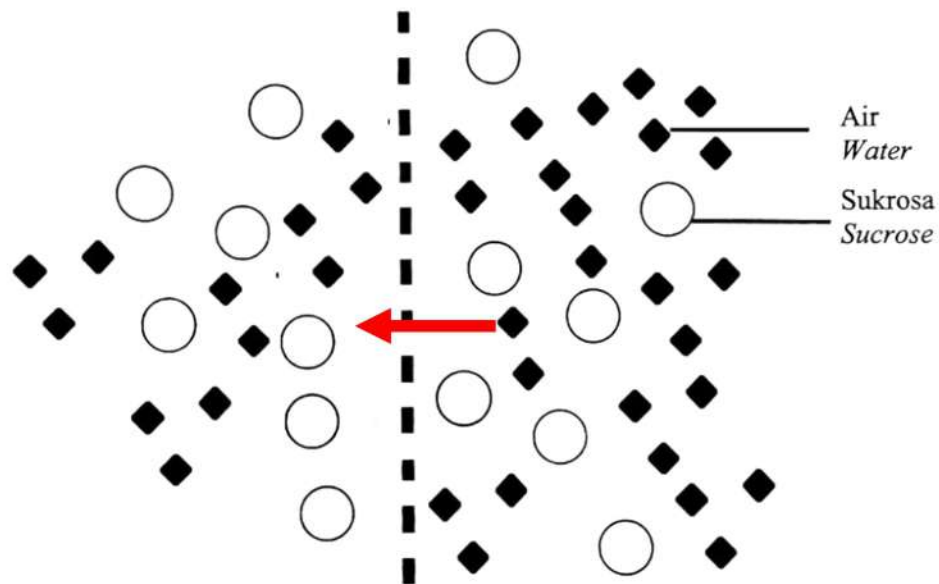
*State the name of salt R and describe how salt R helps in reducing the effects of diarrhoea.*

- P1 Garam penghidratan oral / *Oral dehydration salts*  
 E1 Menggalakkan penyerapan semula air di usus besar / *Promotes the reabsorption of water in large intestine*  
 E2 Mengembalikan kehilangan air / elektrolit / *Recover loss of water / electrolytes*  
 E3 Menghidratkan semula badan / *Dehydrates the body* [3 markah/marks]

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6
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- 2 Rajah 2.1 menunjukkan dua larutan sukrosa yang berlainan kepekatan yang dipisahkan oleh membran telap memilih.  
 Diagram 2.1 shows two sucrose solutions with a different concentration that are separated with selectively permeable membrane.



Larutan sukrosa 30%  
30% Sucrose solution

Larutan sukrosa 10%  
10% Sucrose solution

Rajah 2.1 / Diagram 2.1

- (a) (i) Kenal pasti :  
Identify:

Pelarut / Solvent: Air / Water

Zat terlarut / Solute: Sukrosa / Sucrose

[2 markah / marks]

2(a)(i)

2
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- (ii) Dalam Rajah 2.1, lukiskan anak panah untuk menunjukkan arah pergerakan molekul air yang akan berlaku.  
*In Diagram 2.1, draw arrow to show direction of movement of water molecule that will occur.*

[1 markah /mark]

2(a)(ii)

	1
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- (b) Rajah 2.2 menunjukkan keratan akhbar tentang sekumpulan penyelidik di Malaysia yang telah berjaya mencipta Sil-RH Membrane Distillation.  
*Diagram 2.2 shows newspaper cutting about a group of researchers in Malaysia that are successful in developing Sil-RH Membrane Distillation.*



Sumber : Utusan Malaysia 15 Jan 2018  
Source: Utusan Malaysia 15 Jan 2018

Rajah 2.2 / Diagram 2.2

Sil-RH Membrane Distillation adalah membran yang diperbuat daripada sekam padi dan boleh digunakan untuk proses penyahgaraman air laut.  
*Sil-RH Membrane Distillation is a membrane made of from paddy chaff and can be used for desalination process.*

- (i) Namakan teknik yang digunakan dalam proses penyahgaraman air laut.  
*Name the technique used in desalination of sea water process.*

**Osmosis berbalik / Reverse osmosis**

[1 markah / mark]

- (ii) Terangkan peranan membran tersebut dalam proses penyahgaraman.  
*Explain the role of the membrane in desalination process.*

2(b)(i)

	1
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2(b)(ii)

	2
--	---

Total

	6
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- P1 Membran bersifat telap memilih  
*Membrane is a selectively permeable*
- P2 Tekanan dikenakan ke atas air laut melalui membran  
*Pressure is applied to push the seawater through the membrane*
- P3 Membran ini hanya membenarkan molekul air melaluinya / Menghalang zarah bendasing / garam / mikroorganisma  
*The membrane only allows water molecules to pass through / Prevent foreign particles / salt / microorganisms*
- P4 Air yang keluar ialah air tawar / tulen  
*Fresh / Pure water is released*

[2 markah / marks]