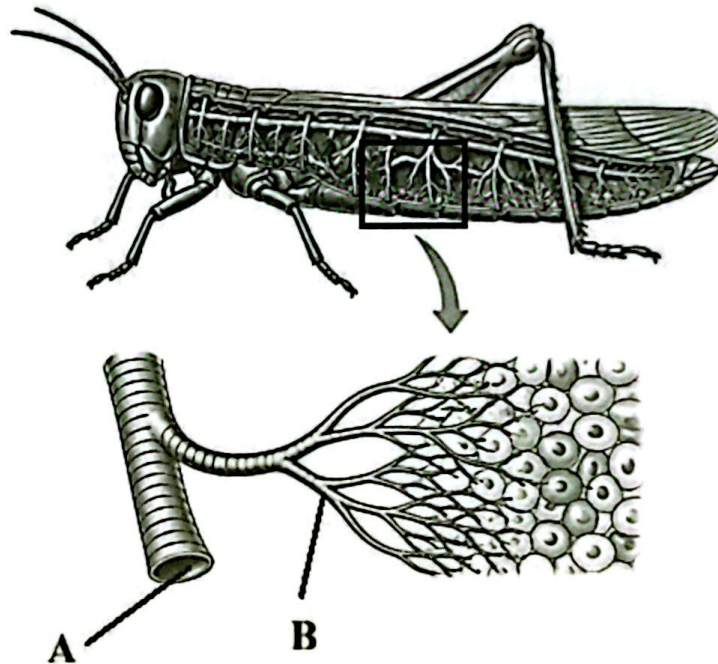


For  
Examiner's  
Use

**BAHAGIAN A**  
**SECTION A**

Jawab semua soalan  
*Answer all the questions.*

1. Rajah 1 menunjukkan sistem respirasi bagi serangga.  
*Diagram 1 shows respiratory system of insect.*



Rajah 1  
Diagram 1

1(a)(i)

|  |   |
|--|---|
|  | 1 |
|--|---|

- (a)(i) Nyatakan nama bagi sistem pernafasan serangga.  
*State the name of the respiratory system of insect.*

.....  
[1 markah / mark]

- (ii) Kenal pasti bahagian berlabel A dan B dalam Rajah 1.  
*Identify parts labelled A and B in Diagram 1.*

1(a)(ii)

|  |   |
|--|---|
|  | 2 |
|--|---|

A: .....

B: .....

[2 markah / marks]

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- (b) Nyatakan dua ciri penyesuaian bagi struktur respirasi serangga dalam Rajah 1.  
*State two adaptation characteristics of respiratory structure of insect in Diagram 1.*

1. ....

2. ....

[2 markah / marks]

1(b)

|   |
|---|
|   |
| 2 |

- (c) Sesetengah serangga mempunyai kantung udara dalam sistem trakeanya. Apakah fungsi kantung udara tersebut kepada serangga?  
*Some insects have air sacs in their tracheal system. What is the function of the air sacs to the insects?*

.....

.....

[1 markah / mark]

1(c)

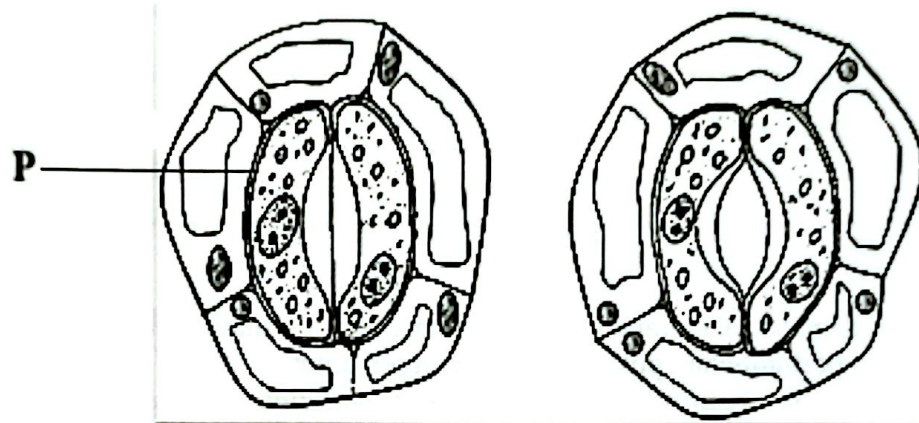
|   |
|---|
|   |
| 1 |

Total

|   |
|---|
|   |
| 6 |

For  
Examiner's  
Use

2. Rajah 2.1 menunjukkan stoma tertutup dan Rajah 2.2 menunjukkan stoma terbuka bagi daun yang sama pada waktu yang berbeza dalam sehari.  
*Diagram 2.1 shows a closed stoma and Diagram 2.2 shows an opened stoma of the same leaf at different times of the day.*



Rajah 2.1  
Diagram 2.1

Rajah 2.2  
Diagram 2.2

2(a)

|   |
|---|
| 1 |
|---|

- (a) Kenal pasti bahagian yang berlabel P pada Rajah 2.1  
*Identify the part labelled P in Diagram 2.1.*

.....  
[1 markah / mark]

2(b)

|   |
|---|
| 1 |
|---|

- (b) Nyatakan apa yang berlaku apabila liang stoma terbuka pada siang hari.  
*State what happens when the stoma is open during the day.*

.....  
[1 markah / mark]



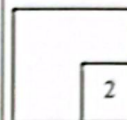
- (c) Pokok tualang yang sangat tinggi mampu mengangkut air dari akar ke pucuk yang melebihi 80 meter.

*A very tall 'tualang' tree is able to transport water from its roots to its shoots, which are more than 80 meters long.*

Jelaskan bagaimana air diangkut ke semua bahagian pokok tersebut melalui xilem.

*Explain how water is transported to all parts of the tree through xylem.*

2(c)



[2 markah / marks]

- (d) Larutan sianida merupakan racun respirasi. Pencemaran sianida di ladang kelapa sawit menyebabkan pertumbuhan pokok kelapa sawit terbantut.

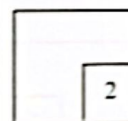
*Cyanide solution is a respiratory poison. Cyanide pollution at oil palm estate cause the growth of the oil palm trees stunted.*

Jelaskan kesan tersebut dan cadangkan satu cara untuk mengatasi masalah tersebut.

*Explain the effect and suggest a method to overcome the problem.*

2(d)

Kesan : .....  
Effect



Cara mengatasi : .....  
Way to overcome

[2 markah / marks]

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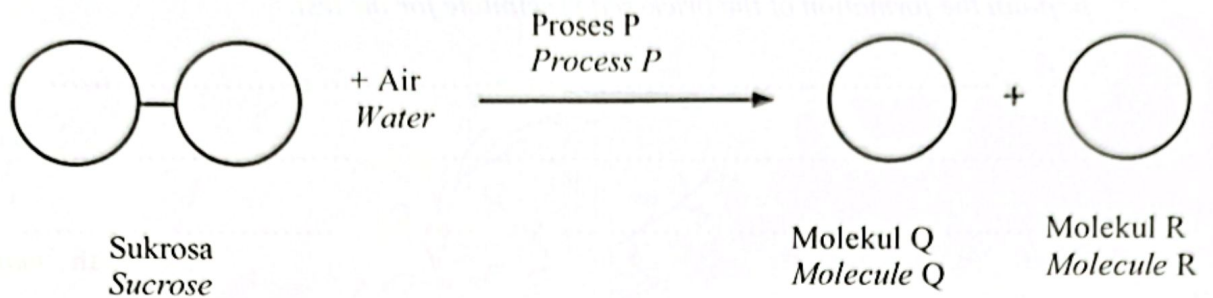
Total





For  
Examiner's  
Use

3. Rajah 3.1 menunjukkan proses penguraian molekul bagi suatu sebatian organik  
Diagram 3.1 shows a process of breaking down a molecule of an organic compound.

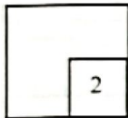


Rajah 3.1  
Diagram 3.1

- (a) Berdasarkan Rajah 3.1,  
Based on Diagram 3.1,

- (i) Nyatakan molekul Q dan proses P.  
State the molecule Q and process P.

3(a)(i)



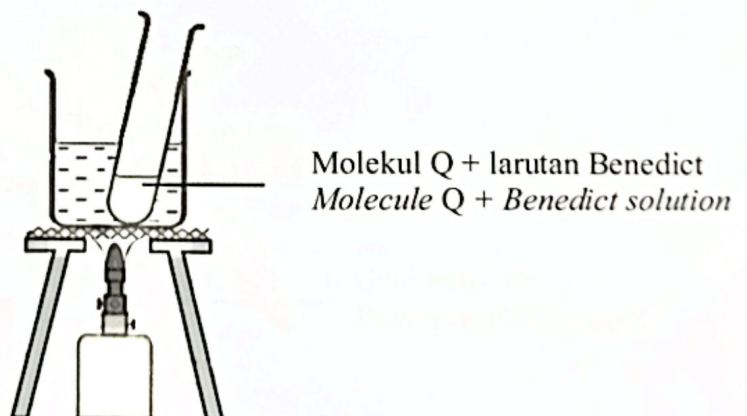
Molekul Q : .....  
Molecule Q

Process P : .....  
Process P

[2 markah / marks]

- (ii) Rajah 3.2 menunjukkan ujian yang dijalankan ke atas molekul Q yang menghasilkan mendakan merah bata.  
Diagram 3.2 shows the tests conducted on the Q molecule produce brick red precipitate.

Diagram 3.2 shows the tests conducted on the Q molecule produce brick red precipitate.



Rajah 3.2  
Diagram 3.2

Terangkan pembentukan mendakan merah bata bagi ujian tersebut.  
*Explain the formation of the brick-red precipitate for the test.*

.....

.....

.....

[2 markah / marks]

- (b) Seorang suri rumah mendapati pakaian yang dicuci menggunakan biodetergen tidak bersih sepenuhnya apabila menggunakan air panas. Berdasarkan pengetahuan anda tentang fungsi enzim dalam biodetergen, terangkan situasi tersebut.  
*A housewife finds that clothes washed using bio detergent are not completely clean when using hot water. Based on your knowledge of the function of enzymes in bio detergents, explain this situation.*

.....

.....

.....

.....

[3 markah / marks]

3(a)(ii)

|   |
|---|
| 2 |
|---|

3(b)

|   |
|---|
| 3 |
|---|

Total

|   |
|---|
| 7 |
|---|

For  
Examiner's  
Use

4. Rajah 4.1 menunjukkan gerak balas tumbuhan terhadap satu rangsangan.  
*Diagram 4.1 shows a response in a plant towards stimulus.*



Rajah 4.1  
Diagram 4.1

4(a)(i)

|   |
|---|
| 1 |
|---|

- (a)(i) Namakan jenis gerak balas yang ditunjukkan dalam Rajah 4.1.  
*Name the type of response shown in Diagram 4.1.*

[1 markah / mark]

4(a)(ii)

|   |
|---|
| 1 |
|---|

- (ii) Nyatakan satu kepentingan gerak balas yang dinamakan di (a)(i) kepada pokok tersebut.  
*State one importance of the response named in (a)(i) to the plant.*

[1 markah / mark]

- (b) Rajah 4.2 menunjukkan kaedah yang digunakan oleh seorang pekebun untuk merangsang pemasakan buah pisang.

*Diagram 4.2 shows the method used by a farmer to stimulate the ripening of bananas.*



Guni kalis air  
*Waterproof straw sack*

Rajah 4.2  
Diagram 4.2



- (i) Namakan fitohormon yang terdapat dalam guni tersebut.  
Name the phytohormone present in the sack.

.....  
[1 markah/mark]

- (ii) Terangkan kaedah tersebut.  
Explain the method used.

.....  
.....  
.....  
[2 markah/marks]

- (c) Rajah 4.3 menunjukkan gerak balas sejenis tumbuhan karnivor.  
Diagram 4.3 shows a type of response in a carnivorous plant.



Rajah 4.3  
Diagram 4.3

Nyatakan **dua** perbezaan antara gerak balas dalam Rajah 4.1 dengan gerak balas dalam Rajah 4.3.  
State **two** differences between the response in Diagram 4.1 and the response in Diagram 4.3.

.....  
.....  
.....  
[2 markah/marks]

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For  
Examiner's  
Use

4(b)(i)

|   |
|---|
| 1 |
|---|

4(b)(ii)

|   |
|---|
| 2 |
|---|

4(c)

|   |
|---|
| 2 |
|---|

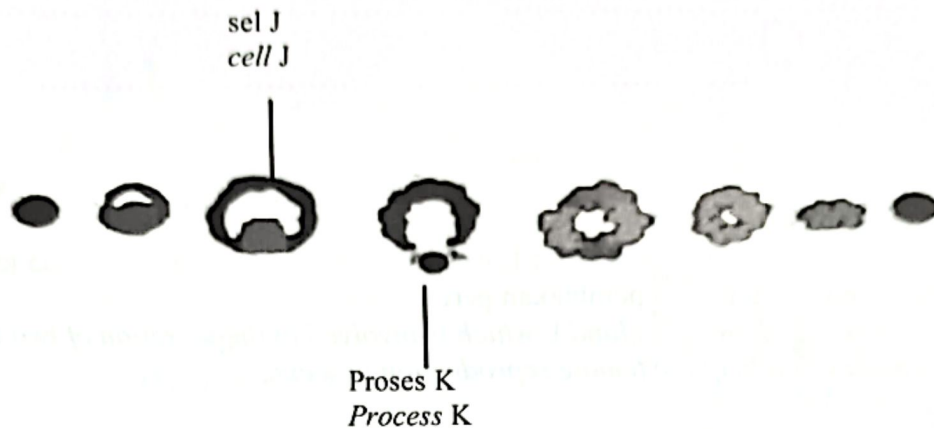
Total

|   |
|---|
| 7 |
|---|

For  
Examiner's  
Use

5. Rajah 5.1 menunjukkan sel J dan proses K yang terdapat dalam sistem pembiakan wanita.

*Diagram 5.1 shows the cell J and process K found in the female reproductive system.*



Rajah 5.1  
Diagram 5.1

5(a)(i)

|   |
|---|
| 2 |
|---|

- (a) Berdasarkan Rajah 5.1  
*Based on Diagram 5.1*

- (i) Kenal pasti sel J dan proses K.  
*Identify cell J and process K.*

Sel J : .....  
Cell J

Proses K : .....  
Process K

[2 markah/ marks]

5(a)(ii)

|   |
|---|
| 1 |
|---|

- (ii) Nyatakan apa yang berlaku semasa proses K.  
*State what happens during process K.*

.....  
.....

[1 markah/mark]

- (b) Seorang wanita berumur 52 tahun telah mengalami menopause dan mendapat simptom seperti sering berpeluh, perubahan emosi dan penurunan ketumpatan tulang. Doktor mencadangkan Terapi Penggantian Hormon (HRT) untuk mengatasi masalah tersebut.

*A 52 year's old woman has gone through menopause and gets the symptoms such as hot flashes, emotional changes and decreased bone density. The doctor recommends Hormone Replacement Therapy (HRT) to overcome the problem.*

Terangkan bagaimana terapi hormon dapat membantu mengurangkan simptom menopause tersebut.

*Explain how hormone therapy can help reduce the symptoms of menopause.*

For  
Examiner's  
Use

5(b)

3

[3 markah / marks]

- (c) Rajah 5.2 menunjukkan kelenjar L yang terlibat dalam perembesan dua jenis hormon yang membantu proses pembiakan perempuan.

*Diagram 5.2 shows the gland L which is involved in the secretion of two types of hormones that help the female reproduction process.*



**Kelenjar L**  
**Gland L**

**Rajah 5.2**  
**Diagram 5.2**

Bandingkan peranan kedua-dua hormon ini dalam mengawal perubahan dinding uterus sepanjang kitar haid seorang perempuan.

*Explain how these two hormones play a role in controlling changes in the uterine wall throughout a woman's menstrual cycle.*

5(c)

2

[2 markah/marks]

Total

8

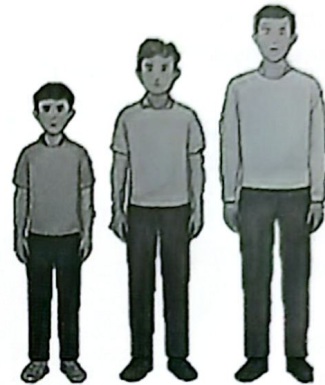


For  
Examiner's  
Use

6. Rajah 6.1(a) dan Rajah 6.1 (b) menunjukkan dua jenis variasi bagi tiga individu berbeza yang sebaya.  
*Diagram 6.1(a) and Diagram 6.1(b) show two types of variation of three individuals of the same age.*



Rajah 6.1 (a)  
*Diagram 6.1 (a)*



Rajah 6.1 (b)  
*Diagram 6.1 (b)*

- (a) Berdasarkan Rajah 6.1(a),  
*Based on Diagram 6.1(a),*

6(a)(i)

|   |
|---|
| 1 |
|---|

- (i) Nyatakan jenis variasi  
*State the type of variation*

.....  
[1 markah / mark]

6(a)(ii)

|   |
|---|
| 1 |
|---|

- (ii) Berikan **satu** contoh lain bagi variasi yang dinyatakan dalam (a)(i).  
*Give **one** other example for the variation stated in (a)(i).*

.....  
[1 markah / mark]

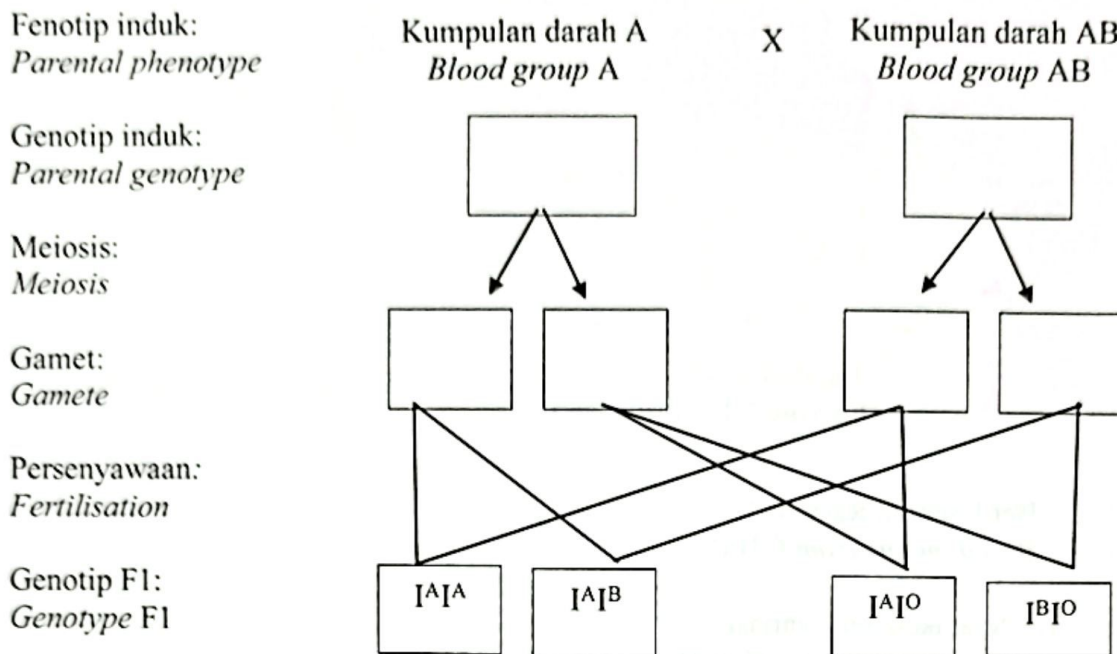
- (b) Nyatakan perbezaan antara variasi dalam Rajah 6.1(a) dan Rajah 6.1(b) berdasarkan kriteria berikut:  
*State the differences between variation in Diagram 6.1(a) and Diagram 6.1(b) based on the following criteria:*

| Rajah 6.1 (a)<br><i>Diagram 6.1 (a)</i> | Kriteria<br><i>Criteria</i>                           | Rajah 6.1 (b)<br><i>Diagram 6.1 (b)</i> |
|-----------------------------------------|-------------------------------------------------------|-----------------------------------------|
|                                         | Ciri perantara<br><i>Intermediate characteristic</i>  |                                         |
|                                         | Faktor yang mempengaruhi<br><i>Factors influenced</i> |                                         |

[2 markah / marks]

For  
Examiner's  
Use

- (c)(i) Rajah 6.2 menunjukkan rajah skema bagi kumpulan darah manusia.  
Diagram 6.2 shows a schematic diagram of human blood group.



Rajah 6.2  
Diagram 6.2

Lengkapkan rajah skema di atas.

Nyatakan kebarangkalian mendapat anak kumpulan darah B.

Complete the schematic diagram above.

State the probability of getting a child with blood group B.

Kebarangkalian: .....  
Probability

[3 markah / marks]

- (ii) Terangkan mengapa kumpulan darah AB ditunjukkan apabila genotip adalah  $I^A I^B$ .  
Explain why the phenotype of blood group AB is expressed when the genotype is  $I^A I^B$ .

[1 markah / mark]

6(c)(i)

|   |
|---|
| 3 |
|---|

6(c)(ii)

|   |
|---|
| 1 |
|---|

Total

|   |
|---|
| 8 |
|---|

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For  
Examiner's  
Use

7. Rajah 7.1 menunjukkan perbezaan bacaan tekanan darah Encik P dalam dua situasi berbeza.  
*Diagram 7.1 shows the difference in Mr. P's blood pressure readings in two different situations.*

| Situasi A<br><i>Situation A</i>                                                   | Situasi B<br><i>Situation B</i>                                                    |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |
| Tekanan Darah : 170 / 98 mmHg<br><i>Blood pressure</i>                            | Tekanan Darah : 116 / 78 mmHg<br><i>Blood pressure</i>                             |

Rajah 7.1  
*Diagram 7.1*

7(a)(i)

|   |
|---|
| 1 |
|---|

- (a)(i) Nyatakan nama reseptor yang terlibat dalam pengawal aturan tekanan darah.  
*State the name of receptor which involves in the regulation of blood pressure.*

.....  
[1 markah / mark]

- (ii) Terangkan bagaimana proses kawal atur tekanan darah berlaku untuk mengembalikan nilai tekanan darah dalam situasi A kepada situasi B.  
*Explain how the blood pressure regulation process occurs to return the value of blood pressure in situation A to situation B.*

.....  
.....  
.....  
.....  
[3 markah/ marks]

7(a)(ii)

|   |
|---|
| 3 |
|---|



- (b)(i) Dalam situasi A, Encik P turut mengalami perubahan tekanan osmosis darah. Terangkan mengapa berlaku perubahan dalam tekanan osmosis beliau dalam situasi tersebut.

*In situation A, Mr. P also experienced a change in his blood osmotic pressure. Explain why there was a change in his osmotic pressure in that situation.*

.....

.....

.....

[2 markah / marks]

- (ii) Setelah tamat larian, Encik P telah makan dua bungkus makanan ringan yang tinggi garam. Wajarkan tindakan Encik P tersebut.

*After finishing his run, Mr. P ate two packs of snacks that were high in salt. Justify Mr. P's action.*

.....

.....

.....

.....

[3 markah/ marks]

For  
Examiner's  
Use

7(b)(i)

|   |
|---|
| 2 |
|---|

7(b)(ii)

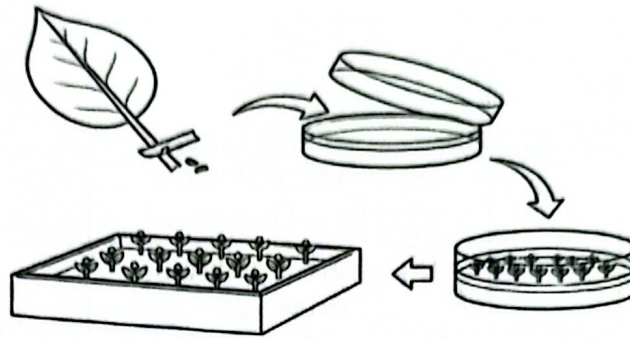
|   |
|---|
| 3 |
|---|

Total

|   |
|---|
| 9 |
|---|

For  
Examiner's  
Use

- 8(a) Rajah 8.1 menunjukkan teknik K yang dijalankan oleh En. M bagi menghasilkan anak pokok dalam masa yang singkat.  
*Diagram 8.1 shows technique K that carried out by Mr. M to produce seedlings in a short time.*



Rajah 8.1  
*Diagram 8.1*

Terangkan teknik bagi menghasilkan anak pokok ini.  
*Describe the technique used to produce these seedlings.*

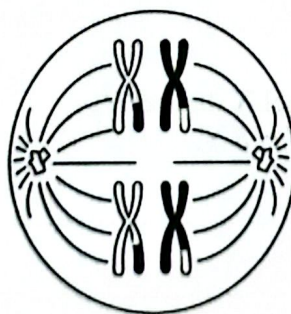
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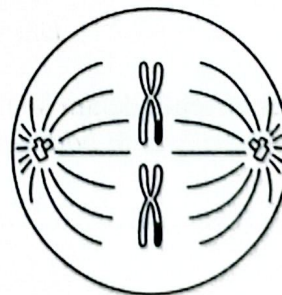
.....

[3 markah/marks]

- (b)(i) Rajah 8.2(a) dan 8.2(b) menunjukkan dua susunan kromosom pada satah khatulistiwa semasa meiosis.  
*Diagrams 8.2(a) and 8.2(b) show two chromosomes arrangement at the equatorial plane during meiosis.*



Rajah 8.2 (a)  
*Diagram 8.2(a)*



Rajah 8.2 (b)  
*Diagram 8.2(b)*

Nyatakan perbezaan bagi Rajah 8.2(a) dan Rajah 8.2(b) berdasarkan aspek yang diberikan

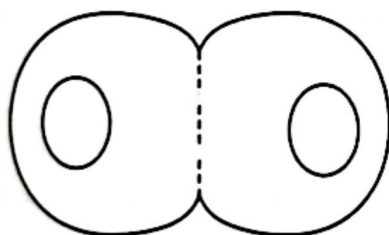
*State the differences between Diagram 8.2(a) and Diagram 8.2(b) based on the aspects given*

| Rajah 8.2(a)<br>Diagram 8.2(a) | Aspek<br>Aspect                                                            | Rajah 8.2(b)<br>Diagram 8.2(b) |
|--------------------------------|----------------------------------------------------------------------------|--------------------------------|
|                                | Perlakuan kromosom<br><i>Chrosomal behaviour</i>                           |                                |
|                                | Bilangan sel anak yang terbentuk<br><i>Number of daughter cell formed.</i> |                                |

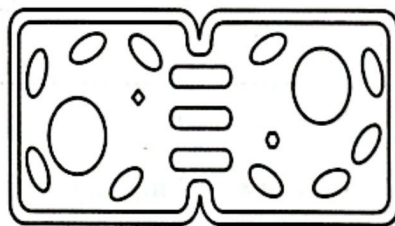
[2 markah/marks]

- (ii) Rajah 8.3 menunjukkan proses sitokinesis yang berlaku sebaik sahaja selepas nukleus terbentuk. Proses ini berbeza antara sel X dan sel Y.

*Diagram 8.3 shows the process cytokinesis that occurs immediately after the nucleus is formed. This process differs between cells X and cells Y.*



Sel X / Cell X



Sel Y / Cell Y

Rajah 8.3  
Diagram 8.3

Bezakan proses tersebut dalam kedua-dua sel X dan sel Y.

*Differentiate the process in both cell X and cell Y.*

.....

.....

.....

[2 markah/marks]

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8(b)(i)

|   |
|---|
| 2 |
|---|

8(b)(ii)

|   |
|---|
| 2 |
|---|



- (c) Rajah 8.4 menunjukkan satu poster sempena Hari Kanser Sedunia bagi tahun 2025 yang dikeluarkan oleh Kementerian Kesihatan Malaysia.  
*Diagram 8.4 shows a poster in conjunction with World Cancer Day for the year 2025 which was issued by the Ministry of Health Malaysia.*



Rajah 8.4  
 Diagram 8.4

Cadangkan **dua** langkah pencegahan penyakit kanser yang boleh diamalkan oleh masyarakat.  
*Suggest **two** cancer prevention measures that can be practiced by the community.*

8(c)

|   |
|---|
| 2 |
|---|

.....

.....

.....

[2 markah/marks]

Total

|   |
|---|
| 9 |
|---|

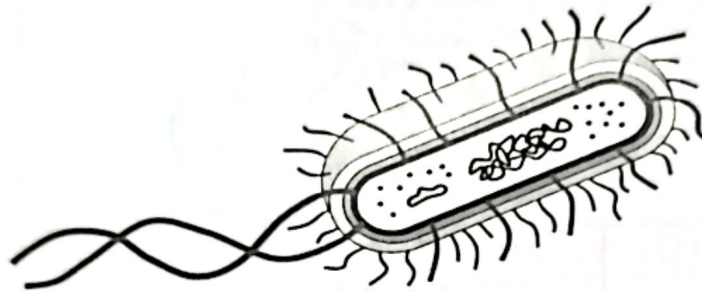
**BAHAGIAN B**  
**SECTION B**

[20 markah / marks]

Jawab **SATU** soalan sahaja daripada bahagian ini  
*Answer only **ONE** question from this section.*

- 9(a)(i) Rajah 9.1 menunjukkan sejenis organisma yang banyak terdapat dalam persekitaran kita.

*Diagram 9.1 shows a type of organism which exist abundantly in our environment.*

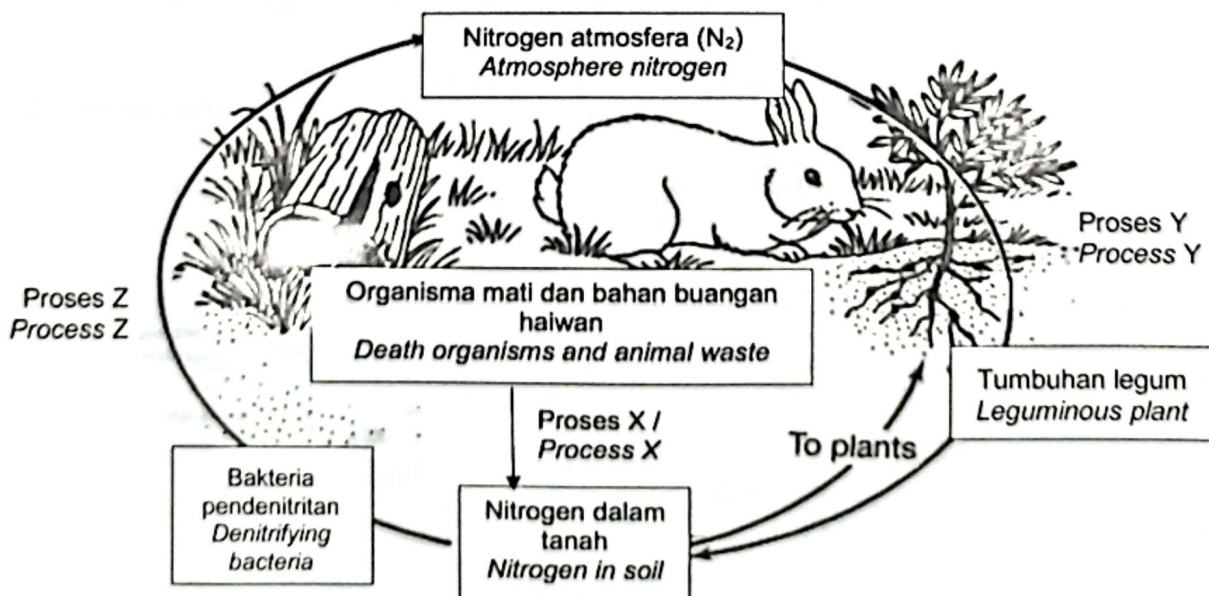


Rajah 9.1  
Diagram 9.1

Berdasarkan pengetahuan Biologi anda, nyatakan **dua** ciri organisma dalam Rajah 9.1  
*Based on Biological knowledge, state **two** characteristics of organism in Diagram 9.1*

[2 markah / marks]

- (b) Rajah 9.2 menunjukkan beberapa organisma yang terlibat dalam kitar nitrogen.  
*Diagram 9.2 shows some organisms involved in the nitrogen cycle.*



Rajah 9.2  
Diagram 9.2

- (b)(i) Bakteria dan kulat merupakan contoh mikroorganisma yang menjalankan proses X. Proses X akan terganggu pada musim sejuk dan akan mempengaruhi keperluan nitrogen dalam tumbuhan.

*Bacteria and fungi are examples of microorganisms that carry out process X.*

*Process X will be disturbed during winter season and it will affect the nitrogen requirements of plants.*

Terangkan.

*Explain.*

[8 markah / marks]

- (ii) Terangkan perbezaan antara proses Y dan proses Z dalam Rajah 9.2.

*Explain the differences between process Y and process Z in Diagram 9.2.*

[4 markah / marks]

- (c) Fenomena eutrofikasi dan pencemaran terma merupakan satu ancaman kepada alam sekitar. Terangkan perkaitan antara fenomena eutrofikasi dan pencemaran terma menyumbang kepada peningkatan nilai keperluan oksigen biokimia (BOD).

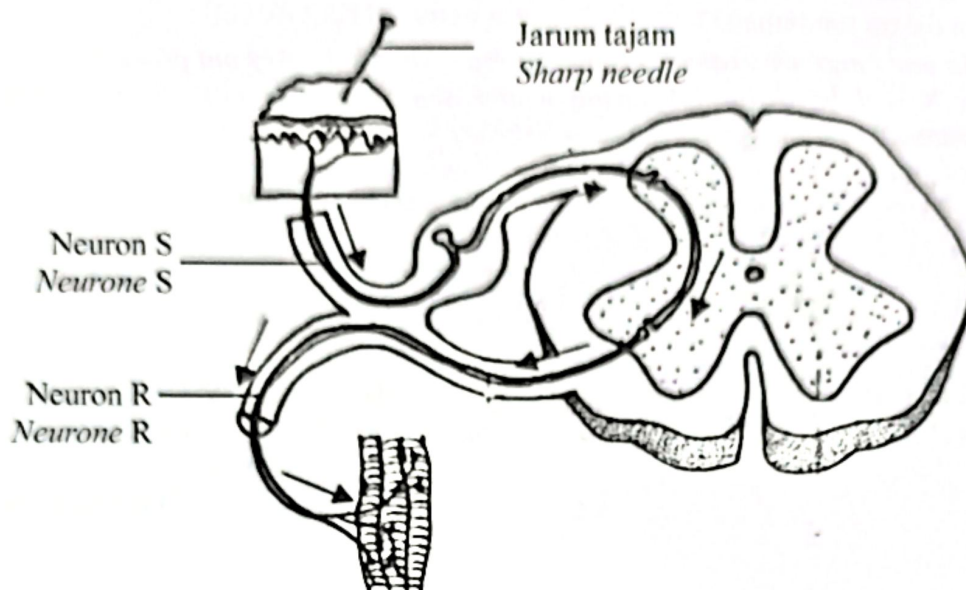
*Eutrophication and thermal pollution are environmental threats. Explain how the relationship between eutrophication and thermal pollution contributes to the increasing of biochemical oxygen demand (BOD).*

[6 markah / marks]

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- 10(a) Rajah 10.1 menunjukkan laluan impuls saraf dalam suatu tindakan refleks.  
*Diagram 10.1 shows the pathway of nerve impulse in a reflex action.*



Rajah 10.1  
 Diagram 10.1

- (i) Terangkan kepentingan tindakan refleks.  
*Explain the importance of reflex action.* [2 markah / marks]
- (ii) Terangkan perbezaan neuron R dan neuron S.  
*Explain the differences between neuron R and neuron S.* [4 markah / marks]
- (b) Rajah 10.2 menunjukkan seorang remaja lelaki yang teruja menaiki permainan di sebuah taman tema.  
*Diagram 10.2 shows a teenage boy that excited when riding games in a theme park.*



Rajah 10.2  
 Diagram 10.2

Dia berasa risau dan takut. Huraikan bagaimana kelenjar adrenal bergerak balas dalam menghadapi situasi tersebut.

*He feels worried and scared. Describe how adrenal gland responds in this situation.*

[8 markah / marks]

- (c) Maklumat berikut merupakan dua sistem yang berbeza berkaitan koordinasi dan gerak balas manusia.

*The following information shows two different system related to human coordination and response.*

**Sistem P**  
**System P**

Jaringan komunikasi kompleks yang terdiri daripada sel neuron, otak dan saraf tunjang yang berfungsi menyelaraskan tindakan terkawal dan tindakan luar kawal, memproses maklumat dan menghantar impuls ke seluruh badan.

*Network of complex communication that consist of neuron cell, brain and spinal cord that function to coordinate voluntary action and involuntary action, process information and send impulse throughout the body.*

**Sistem Q**  
**System Q**

Jaringan kelenjar endokrin tanpa duktus yang merembeskan hormon terus ke dalam aliran darah bagi mengawal atur fungsi badan seperti pertumbuhan, pembiakan, metabolisme dan homeostasis

*Network of ductless endocrine gland that secret hormones directly into the bloodstream to regulate body function such as growth, reproduction, metabolism and homeostasis.*

Banding bezakan sistem P dan sistem Q  
*Compare and contrast system P and system Q.*

[6 markah / marks]

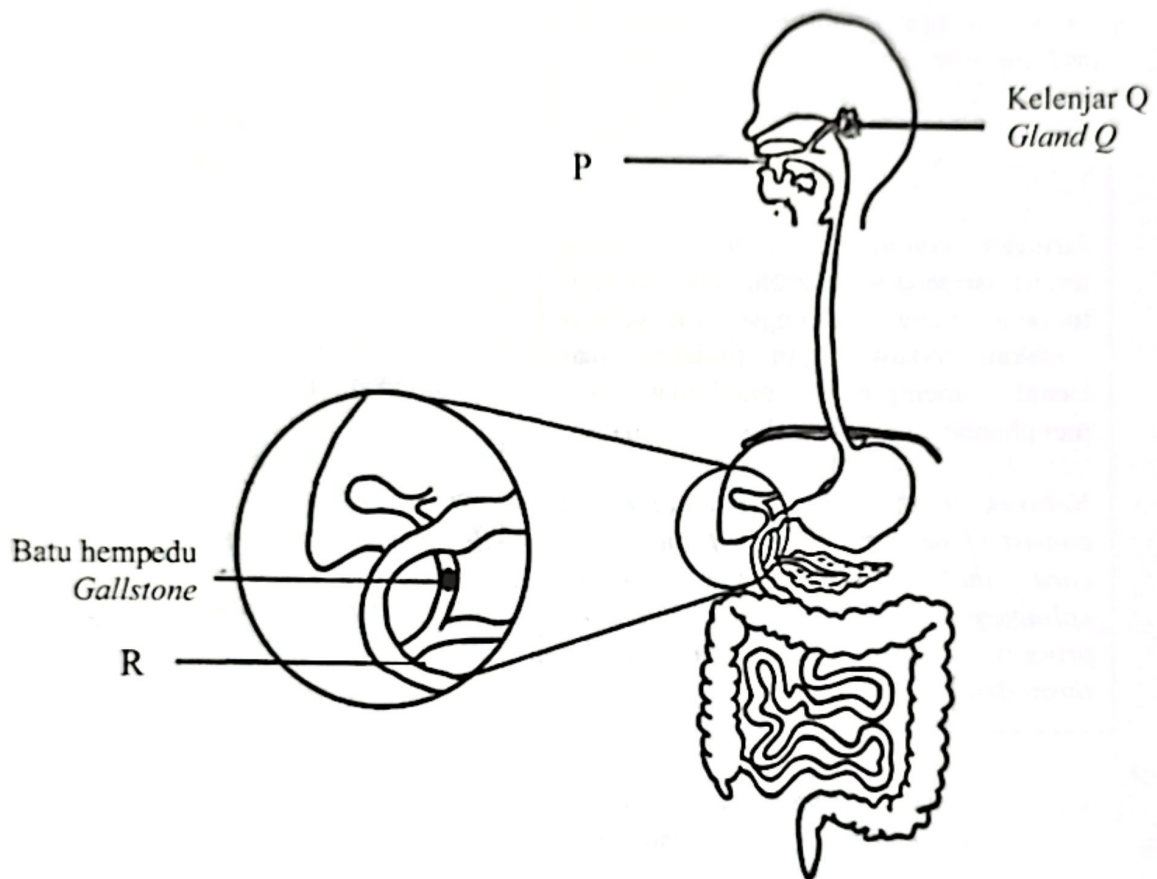
SECTION C  
BAHAGIAN C

[20 markah / marks]

Jawab soalan dalam bahagian ini

Answer questions from this section

- 11 Rajah 11.1 menunjukkan sistem pencernaan manusia.  
*Diagram 11.1 shows a human digestive system.*



Rajah 11.1  
Diagram 11.1

- (a)(i) Nasi mengandungi kanji.  
Terangkan peranan kelenjar Q dalam pencernaan nasi di P.  
*Rice contain starch.*  
*Explain the role of gland Q in the digestion of rice in P.*

[3 markah / marks]

<https://t.me/cikgufazLiebiosensei>



- (ii) Seorang individu mempunyai batu hempedu seperti dalam Rajah 11.1.  
 Terangkan kesan keadaan ini kepada
- Pencernaan lipid dalam R
  - Proses penyahtinjaan individu tersebut

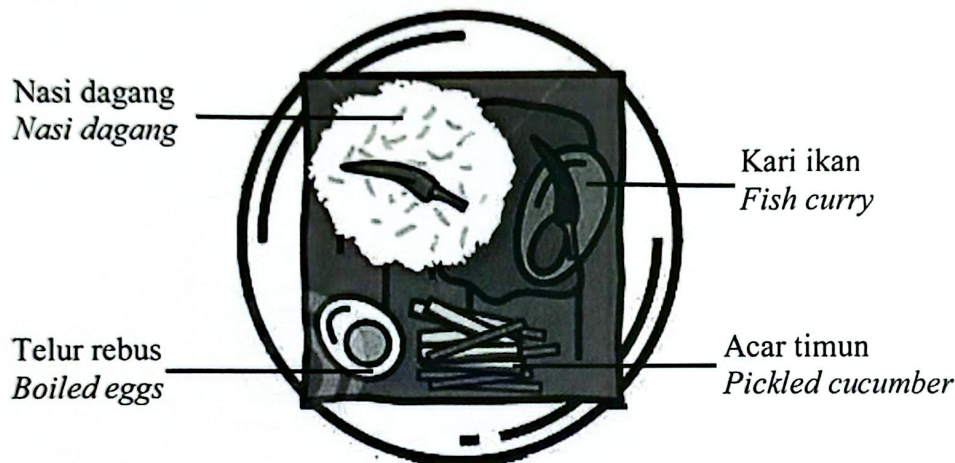
*An individual has gallstone as in Diagram 11.1.*

*Explain the effects of this condition on*

- *Digestion of lipid in R.*
- *Defaecation process of that individual*

[7 markah / marks]

- (b) Rajah 11.2 menunjukkan satu set nasi dagang.  
*Diagram 11.2 shows a set of nasi dagang.*



Rajah 11.2  
 Diagram 11.2

Individu U yang mengidap penyakit kardiovaskular mengambil satu set nasi dagang sebagai sarapan setiap hari dalam jangka masa yang panjang.

*Individuals U suffering from cardiovascular disease consumes a set of 'nasi dagang' daily as breakfast for a long period of time.*

Wajarkan diet itu terhadap kesihatannya.  
*Justify that diet to his health.*

[6 markah / marks]

- (c) Encik Y mempunyai Indeks Jisim Badan (BMI) yang obes. Beliau telah mencuba pelbagai kaedah diet tetapi tidak berjaya. Doktor telah mencadangkan supaya Encik Y menjalani pembedahan bagi mengurangkan berat badannya. Sebahagian daripada organ pencernaannya yang tertentu perlu dibuang.

- Cadangkan organ pencernaan yang perlu dibuang
- Terangkan bagaimana pembedahan ini dapat mengurangkan berat badan Encik Y

*Mr Y has an obese Body Mass Index (BMI). He has tried various dieting methods but has not succeeded. A doctor has suggested that Mr Y to undergo weight loss surgery. Certain part of his digestive organs need to be removed.*

- *Suggest the digestive organ that needs to be removed*
- *Explain how does this surgery is able to reduce Mr Y body weight*

[4 markah / marks]

**END OF THE QUESTIONS**  
**SOALAN TAMAT**