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PART 1

BIOLOGY

VIDEO PEMBELAJARAN LENGKAP DI

Tingkatan 4

Tingkatan 5

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2017 BIOLOGY SPM PAPER 2 ✏️ 2019 BAC SPM BIOLOGY P2

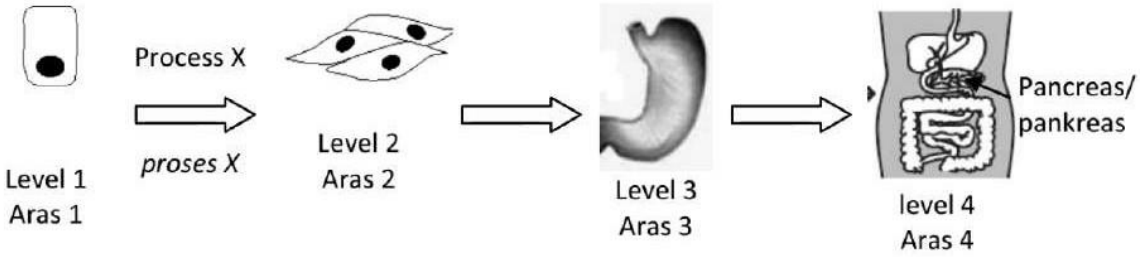
SECTION A
1) **Chapter 3 (Form 4)** Simple diffusion, Food preservation, Active transport
2) **Chapter 2 (Form 5)** Locomotion of fish 🐟
3) **Chapter 4 (Form 4)** Cellulose Enzymes (Application & Activation energy)
4) **Chapter 7 (Form 4)** Human respiratory system, Smoking
5) **Chapter 4 (Form 5)** Ovarian cycle, Contraceptive pills

SECTION B
6) **Chapter 3 (Form 5)** Reflex action Afferent neurone VS Efferent neurone Depressant effect on impulse transmission
7) **Chapter 1 (Form 5)** Interstitial fluid Normal artery VS Artery with plaque Natural passive & Artificial active immunities
8) **Chapter 6 (Form 4)** Eating habit Good and bad effects of eating burger 🍔
9) **Chapter 9 (Form 4)** Air pollution, Deforestation

CHAPTER 2

SOALAN 1

1 Diagram 1 shows four levels of cell organisation in humans.
Rajah 1 menunjukkan empat aras organisasi sel dalam manusia.



Diagram/ Rajah 1

(a) Complete Table 1 by naming Level 2 and Level 3.
Lengkapkan Jadual 1 dengan menamakan Aras 2 dan Aras 3.

Level / *Aras*	**Name** / *Nama*
1	Cells
2	.....
3	.....
4	System

[2 marks/ markah]

(b) (i) The cell undergo process X to become specific cells that perform a specific function.
Name process X.
Sel-sel itu melalui proses X untuk menjadi sel khusus yang menjalankan fungsi yang khusus.
Namakan proses X

Process X / *Proses X* : .....

[1 mark/ markah]

(ii) Based on the diagram 1 ,what is the function of the structure in level 2?
Berdasarkan Rajah 1, apakah fungsi struktur dalam aras 2?

.....

.....

[2 marks/ markah]

(iii) Name the system in level 4.
Namakan sistem dalam aras 4

.....

[1 mark/ markah]

(c) Pancreas is one of the organ in the system. Explain how pancreas reacts in the regulation of the glucose content in human blood.
Terangkan bagaimana tindakan pankreas terhadap kawal atur kandungan glukosa dalam darah manusia.

.....

.....

.....

.....

.....

.....

[4 marks/ markah]

(d) (i) A man found his urine contain sugar when tested with Benedict solution
Seorang lelaki telah mendapati air kencingnya mengandungi gula dalam ujian dengan larutan benedict

State the health problem faced by the man.
Nyatakan masalah kesihatan lelaki tersebut.

.....

[1 mark/ markah]

(ii) Suggest the action need to be taken by the man to overcome his health problem in (d) (i)
Cadangkan satu tindakan perlu diambil oleh lelaki tersebut untuk mengatasi masalah Kesihatannya dalam (d) (i)

.....

[1 mark/ markah]

SOALAN 2

CHAPTER 3

3 Diagram 3.1 shows a structure of cells P that were seen under a microscope.
Rajah 3.1 menunjukkan struktur sel P yang dapat dilihat di bawah mikroskop

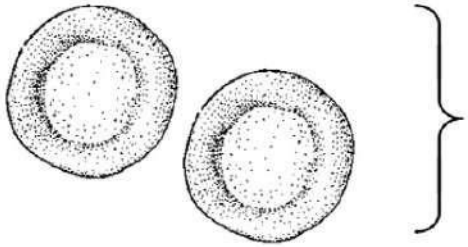


Diagram 3.1
Rajah 3.1

(a) (i) Name cell P.
Namakan sel P.

.....

[1 mark]
[1 markah]

(ii) State **one** function of cell P.
*Nyatakan **satu** fungsi P.*

.....

[1 mark]
[1 markah]

(b) Cell P is immersed in a concentrated salt solution.
Sel P telah direndamkan dalam larutan garam yang pekat.

i) Draw a diagram to show the condition of cell P after 20 minutes.
Lukis rajah untuk menunjukkan keadaan P selepas 20 minit.

[2 marks]
[2 markah]

(ii) Explain what had happened to cell P in b(i)

Terangkan apakah yang telah berlaku pada sel P di b(i).

.....

.....

.....

.....

[3 marks]
[3 markah]

(c) Diagram 3.2 shows the structure of a plasma membrane of cell P.

Rajah 3.2 menunjukkan struktur membran plasma.

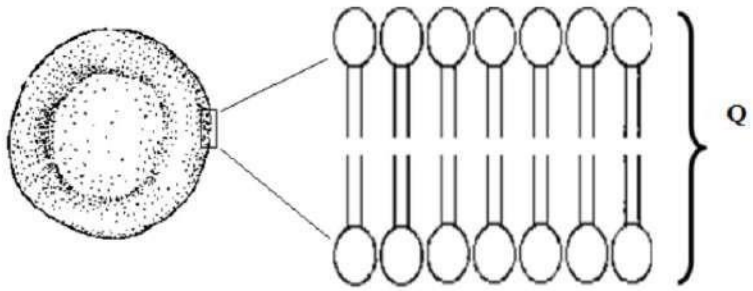


Diagram 3.2
Rajah 3.2

(i) Name layer Q.

Namakan lapisan Q.

.....

[1 mark / *markah*]

(ii) State the main component of layer Q.

Nyatakan komponen utama bagi lapisan Q.

.....

[1 mark]
[1 markah]

(iii) Cells P is mixed with detergent. The detergent dissolves lipids.
After 10 minutes, the mixture is examined under a microscope, no cells P were seen but the mixture turn red and cloudy.

Explain why?

Sel P telah dicampurkan dengan bahan pencuci. Bahan pencuci tersebut melarutkan lemak.
Selepas 10 minit campuran tersebut telah diperiksa di bawah mikroskop. Tiada sel P yang dapat diperhatikan tetapi campuran tersebut telah menjadi merah keruh.

Terangkan kenapa?

.....

.....

.....

.....

.....

[3 marks]
[3 markah]

Q1. HOTS - Evaluating 🤔 4 marks

Q2. HOTS - Evaluating 🤔 4 marks

Q3. HOTS - Evaluating 🤔 3 marks

CHAPTER 6

SOALAN 3

7 Diagram 7 shows the assimilation of digested food in the liver and body cell.
Rajah 7 menunjukkan asimilasi hasil pencernaan makanan, di sel hati dan sel badan.

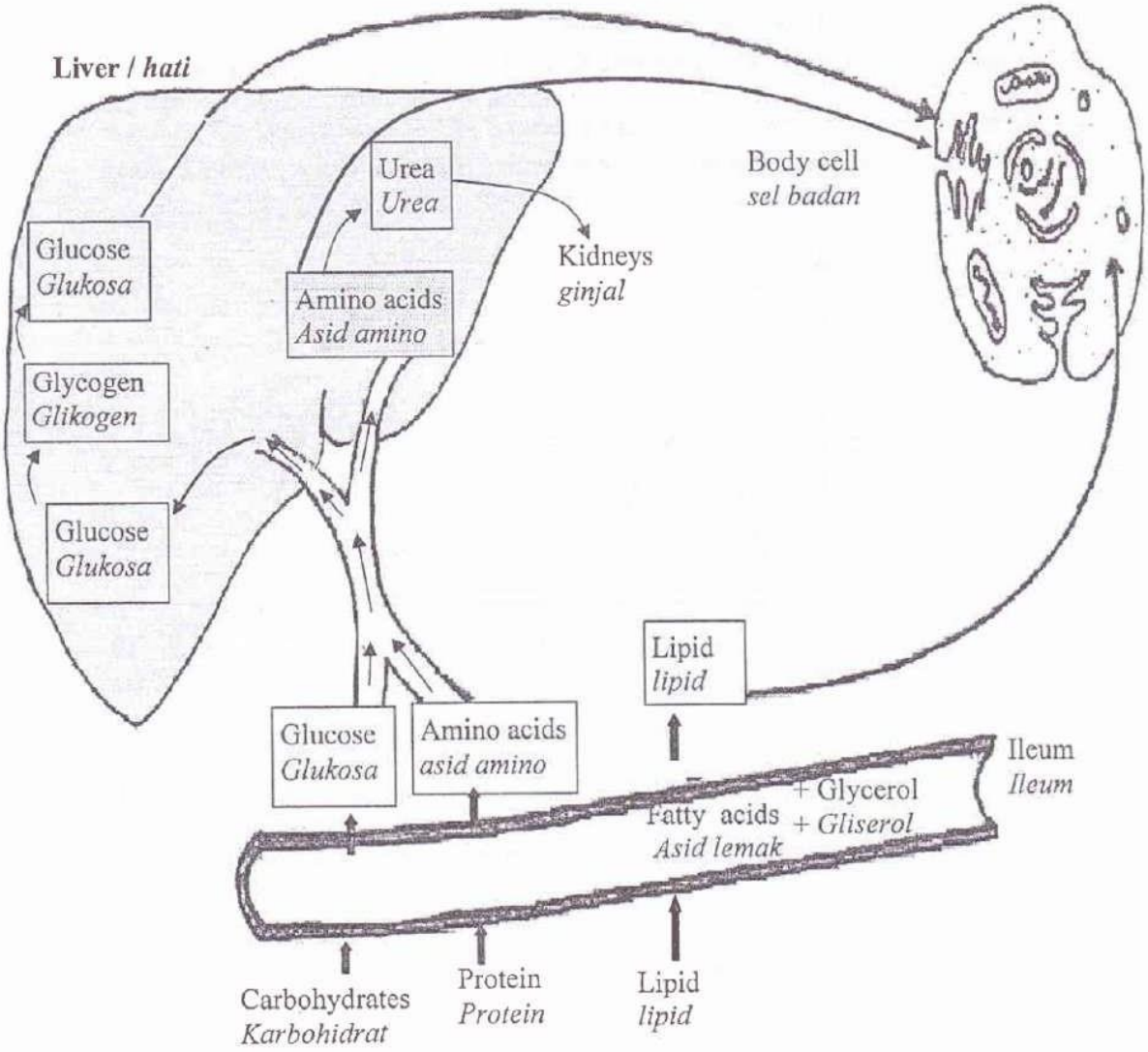


Diagram 7 / *Rajah 7*

(a) Based on Diagram 7 , explain the assimilation of the followings:
Berdasarkan Rajah 7, terangkan asimilasi bagi bahan-bahan berikut:

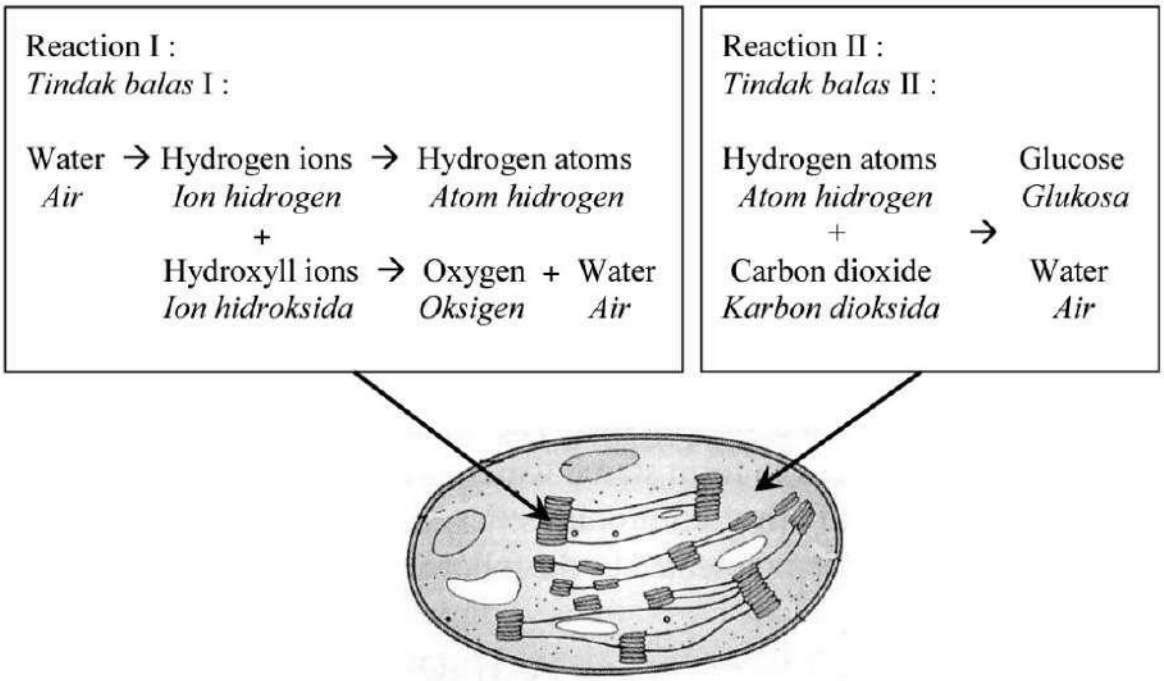
(i) glucose / *glukosa*
(ii) amino acids / *asid amino*
(iii) lipids / *lipid*

[10 marks / *markah*]

SBP 2012

(a) Diagram 8.1 shows two reactions that occur is a chloroplast.

Rajah 8.1 *menunjukkan dua tindak balas yang berlaku di dalam kloroplas.*



Chloroplast
Kloroplas

Diagram 8.1
Rajah 8.1

Based on Diagram 8.1, describe both reactions.

Berdasarkan Rajah 8.1, *huraikan kedua-dua tindak balas,*

[10 marks]
[10 *markah*]

(*b*) Diagram 9 shows a set of nasi lemak.

Rajah 9 menunjukkan satu set nasi lemak.

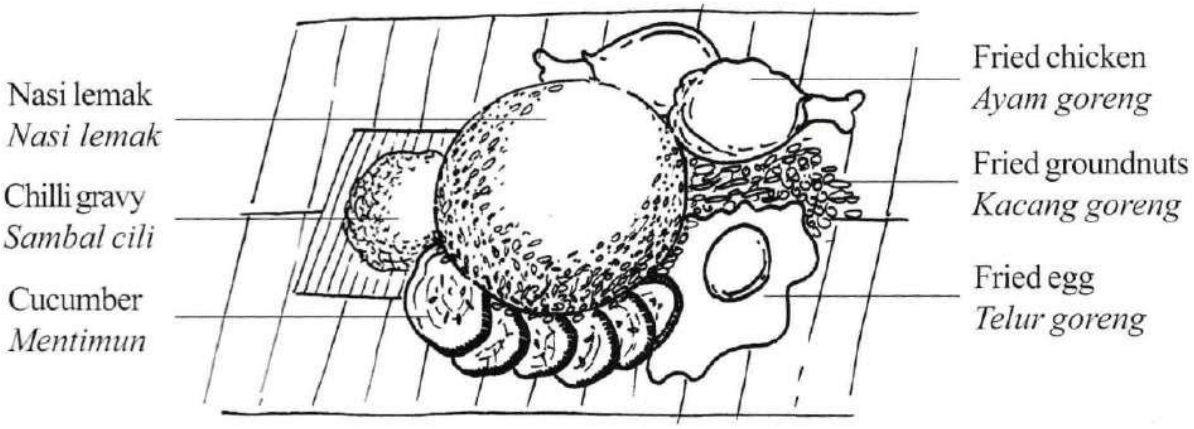


Diagram 9
Rajah 9

A girl consumes a set of nasi lemak daily as breakfast for a long period of time.

Discuss the good and the bad effects of the diet to her health. [10 *marks*]

Seorang kanak-kanak perempuan mengambil satu set nasi lemak sebagai sarapan setiap hari dalam jangka masa yang panjang.

Bincangkan kesan baik dan kesan buruk diet itu terhadap kesihatannya.

[10 *markah*]

CHAPTER 7

SOALAN 4

1 Diagram 3 shows a type of organelle found in muscle cells.
A biochemical reaction occurs in the organelle.
Rajah 3 menunjukkan sejenis organel yang terdapat dalam sel otot.
Tindak balas biokimia berlaku dalam organel tersebut.

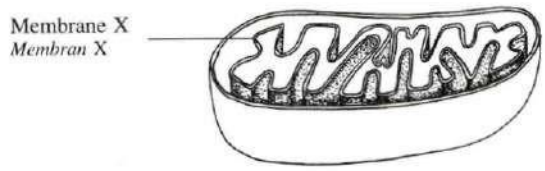


Diagram 3
Rajah 3

(a) (i) Name this organelle.
2.1 *Namakan organel ini.*

[1 *mark*]
[1 *markah*]

(ii) Explain why membrane X is in the form of numerous folded layers.
Terangkan mengapa membran X adalah dalam bentuk lapisan yang berlipat-lipat.

[2 *marks*]
[2 *markah*]

(b) The biochemical reaction that occurs in this organelle is summarised as follows:
7.1 *Tindak balas biokimia yang berlaku dalam organel ini diringkaskan seperti berikut:*

Glucose + P → Q + carbon dioxide + energy
Glukosa + P → Q + *karbon dioksida* + *tenaga*

(i) Name gas P.
Namakan gas P.

[1 *mark*]
[1 *markah*]

(ii) Name product Q.
Namakan hasil Q.

[1 *mark*]
[1 *markah*]

(iii) Explain why the muscle cell has a large number of these organelles.
Terangkan mengapa sel otot mengandungi banyak bilangan organel ini.

[2 *marks*]
[2 *markah*]

(iv) If the blood sugar level is lower than the normal range, the biochemical reaction in this organelle can still occur.
Explain how.
Jika aras gula dalam darah adalah rendah daripada julat normal, tindak balas biokimia dalam organel ini masih boleh berlaku.
Terangkan bagaimana.

[3 *marks*]
[3 *markah*]

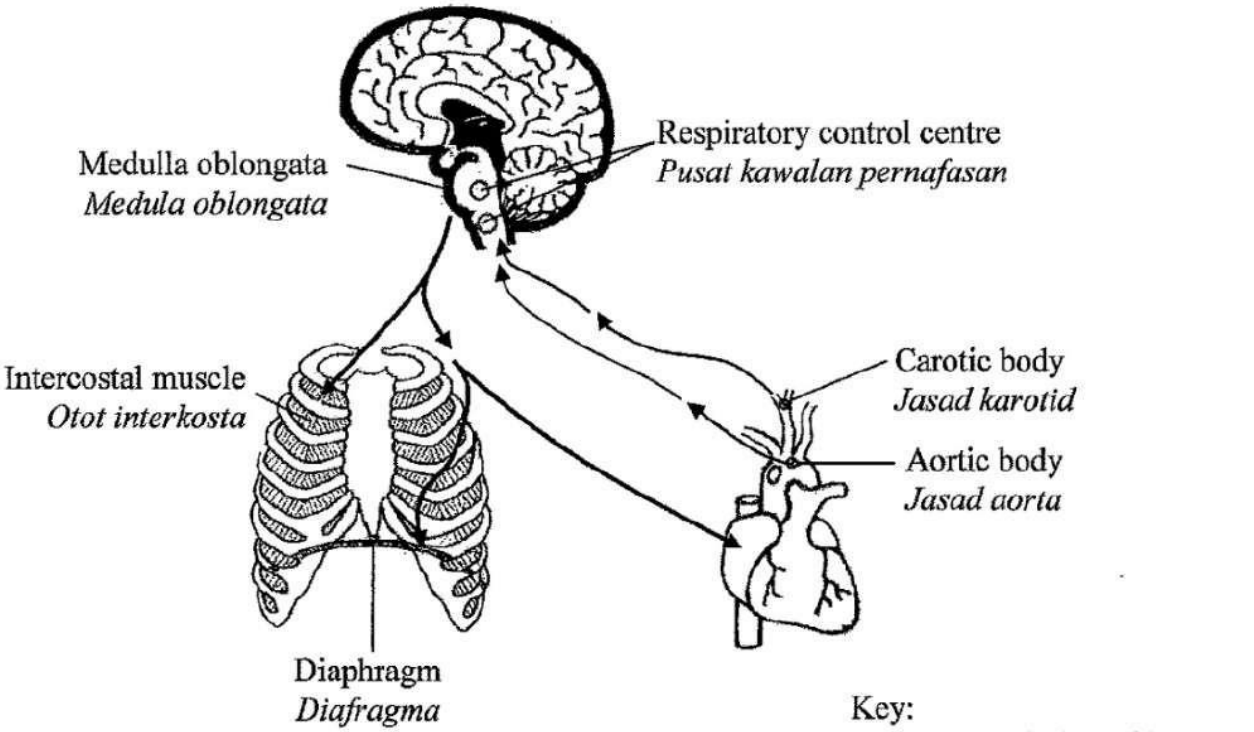
(c) State **two** differences on the biochemical reaction occurring between muscle cell and yeast cell in the
7.1 absence of gas P.
Nyatakan **dua** *perbezaan ke atas tindak balas biokimia yang berlaku antara sel otot dan sel yis tanpa kehadiran gas* P.

Muscle cell *Sel otot*	**Yeast cell** *Sel yis*

[2 *marks*]
[2 *markah*]

SOALAN 5

(c) Diagram 6.2 shows a regulatory mechanism of oxygen and carbon dioxide contents in the body.
Rajah 6.2 menunjukkan mekanisma kawalatur kandungan oksigen dan karbon dioksida di dalam badan.



4551/2

Diagram 6.2
Rajah 6.2

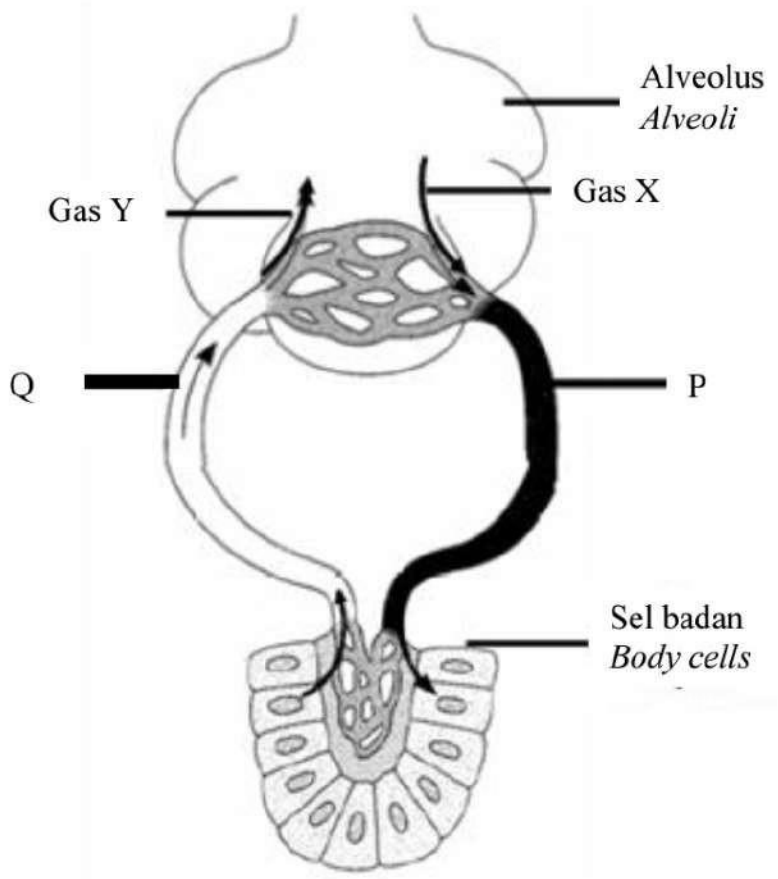
Based on Diagram 6.2, explain how the heart beats and breathing rates increase immediately after vigorous exercise.

Berdasarkan Rajah 6.2, terangkan bagaimana denyutan jantung dan kadar pernafasan bertambah sejurus selepas latihan cergas.

[10 marks]

SOALAN 6

Rajah 3 menunjukkan pertukaran gas respirasi X dan Y diantara alveoli, saluran darah dan sel badan serta pengangkutan gas-gas tersebut.
Diagram 3 shows the exchange of respiratory gases X and Y between the alveolus, blood capillary and the body cells and the transport of the gaseous.



Rajah 3 / *Diagram 3*

(a) (i) Namakan gas X dan Y
Name gas X and Y

Gas X : .....

Gas Y : .....

[2 markah]
[*2 marks*]

(ii) Terangkan bagaimana alveoli distrukturkan untuk meningkatkan kecekapan proses pertukaran gas.
Explain how the alveolus is structured to increase the efficiency of gaseous exchange.

.....

.....

.....

[2 markah]
[*2 marks*]

(b) Terangkan perbezaan antara kepekatan gas X dan Y dalam salur darah Q.
Explain the difference between the concentration of gas X and Y in blood vessel Q.

.....

.....

[2 markah]
[*2 marks*]

(c) Kepekatan gas X yang diangkut dalam salur darah P seseorang penghisap rokok adalah berbeza berbanding individu yang sihat.
Terangkan mengapa keadaan ini berlaku.
The concentration of gas X transported in blood vessel P of a cigarette smoker is differs than the one in healthy individual.
Explain why does this occur?

.....

.....

.....

.....

[3 markah]
[*3 marks*]

(d) Dalam satu kajian, seorang budak lelaki telah mengambil bahagian dalam acara trek 800 meter. Udara hembusannya telah diambil sebanyak tiga kali iaitu sebelum berlari, sebaik sahaja selesai berlari dan 10 minit selepas berlari untuk mendapatkan peratus karbon dioksida. Jadual 3.1 menunjukkan hasil kajian tersebut.

In an experiment, a boy takes part in an 800 metre event track. His exhaled air was obtained three times which were before running, right after he finished running and 10 minutes after running to determine the percentage of carbon dioxide. Table 3.1 shows the result of the experiment.

	Sebelum berlari *Before running*	Sebaik sahaja selesai berlari *Right after he finishes running*	Selepas 10 minit berlari *After 10 minutes running*
Peratus karbon dioksida (%) *Percentage of carbon dioxide (%)*	4%	7.5%	4%

Jadual 3.1 / *Table 3.1*

Berdasarkan Jadual 3.1, terangkan bagaimana peratus karbon dioksida dapat dikembalikan kepada normal selepas 10 minit berlari.

Based on Table 3.1, explain how the percentage of carbon dioxide is returned to normal after 10 minutes running.

.....

.....

.....

.....

.....

[3 markah]

[*3 marks*]

Paper 3

Learning objectives:

1. To master techniques in scoring Paper 3 questions.

1 An experiment was carried out to investigate the effect of light intensity on the rate of photosynthesis of a *Hydrillla sp.* sprig.
Satu eksperimen telah dijalankan untuk mengkaji kesan keamatan cahaya ke atas kadar fotosintesis bagi setangkai Hydrilla sp.

The following steps were carried out.
Langkah-langkah berikut telah dijalankan.

Step 1: 50 ml of 2% sodium hydrogen carbonate solution was placed in a boiling tube.
Langkah 1: 50 ml *larutan* 2% *natrium hidrogen karbonat telah dimasukkan ke dalam tabung didih.*

Step 2: A *Hydrillla sp.* sprig was immersed in the sodium hydrogen carbonate solution.
Langkah 2: *Setangkai Hydrilla sp. direndamkan ke dalam larutan natrium hidrogen karbonat.*

Step 3: A light source from a 60 W bulb was placed at a distance of 60 cm from the boiling tube.
Langkah 3: *Satu sumber cahaya daripada satu mentol* 60 W *diletakkan pada jarak* 60 cm *dari tabung didih.*

Diagram 1 shows the apparatus set-up used in this experiment.
Rajah 1 *menunjukkan susunan radas yang digunakan dalam eksperimen ini.*

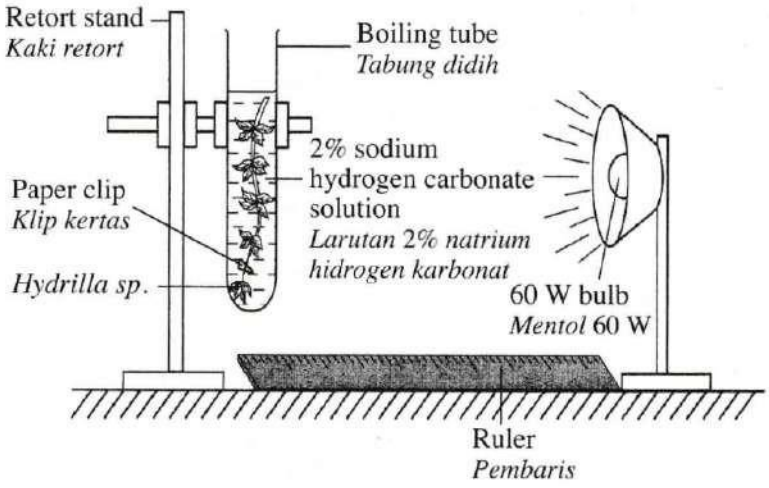


Diagram 1
Rajah 1

(*a*) In Table 1, list all the materials and apparatus labelled in Diagram 1.
Dalam Jadual 1, *senaraikan semua bahan dan radas yang berlabel dalam Rajah* 1.

Material ***Bahan***	**Apparatus** ***Radas***

Table 1
Jadual 1

[3 *marks*]
[3 *markah*]

Table 2 shows the results of this experiment.
Jadual 2 menunjukkan keputusan eksperimen ini.

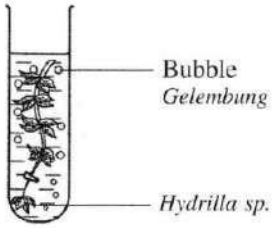
Distance between light source and *Hydrilla sp.* ***Jarak di antara sumber cahaya dan Hydrilla sp.***	**Total number of bubbles released in 5 minutes** ***Jumlah bilangan gelembung yang dibebaskan dalam masa 5 minit***
60 cm	
50 cm	
40 cm	
30 cm	

Table 2
Jadual 2

(b) Record the total number of bubbles released in 5 minutes in the boxes provided in Table 2.
Rekod jumlah bilangan gelembung yang dibebaskan dalam masa 5 minit dalam petak yang disediakan dalam Jadual 2.

[3 *marks*]
[3 *markah*]

(e) State the hypothesis for this experiment.
Nyatakan hipotesis bagi eksperimen ini.

.....

.....

.....

[3 *marks*]
[3 *markah*]

(f) (i) Construct a table and record all the data collected in this experiment.
Bina satu jadual dan rekodkan semua data yang dikumpul dalam eksperimen ini.

Your table should have the following titles:
Jadual anda hendaklah mengandungi tajuk-tajuk berikut:

- Distance between light source and *Hydrilla sp.*
  Jarak di antara sumber cahaya dan Hydrilla sp.
- Total number of bubbles released in 5 minutes
  Jumlah bilangan gelembung yang dibebaskan dalam masa 5 minit
- Light intensity
  Keamatan cahaya

Use the formula:

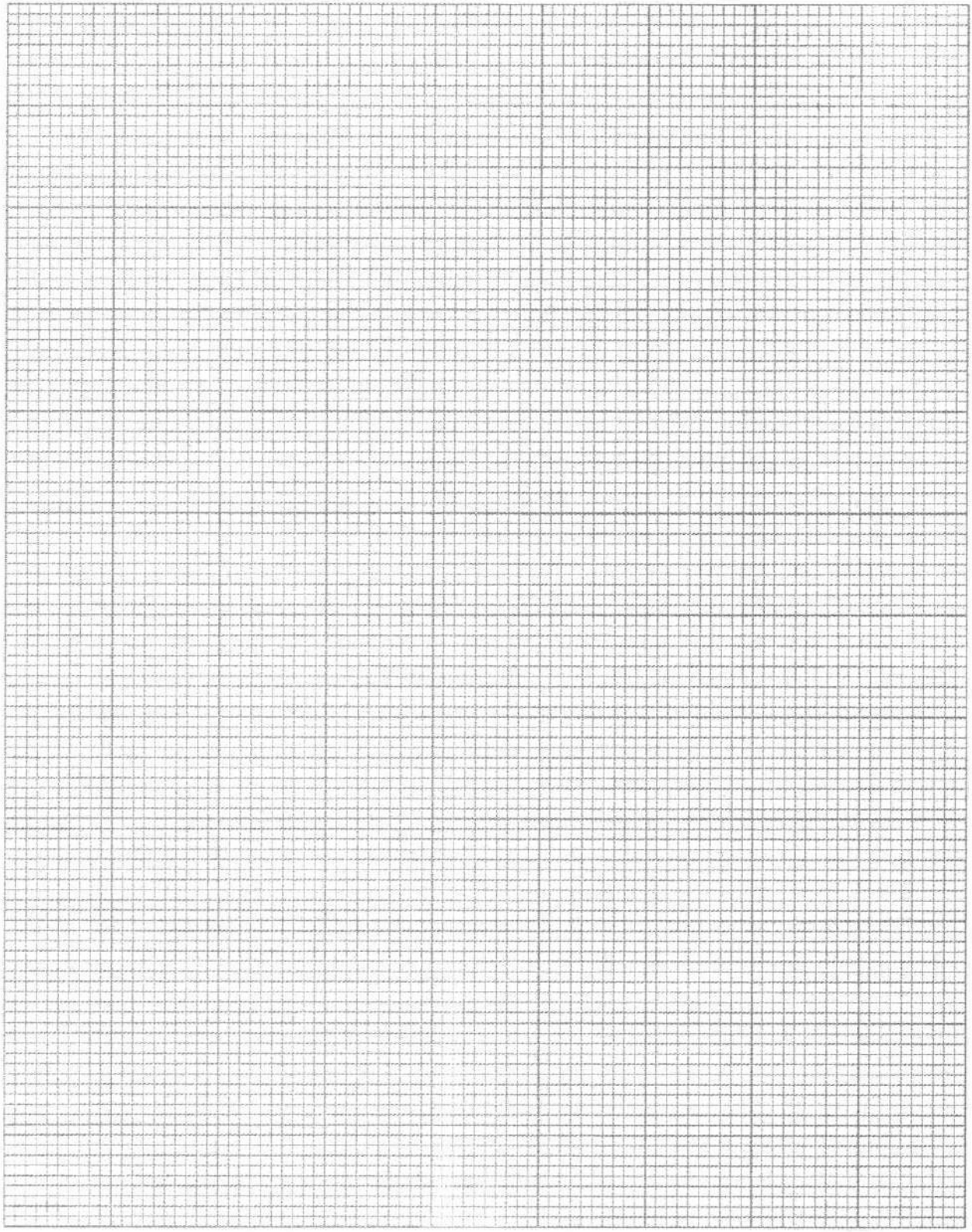
$$\text{Light intensity} = \frac{1}{\text{Distance between light source and } \textit{Hydrilla sp.}}$$

Gunakan formula:

$$\textit{Keamatan cahaya} = \frac{1}{\textit{Jarak di antara sumber cahaya dan Hydrilla sp.}}$$

[3 *marks*]
[3 *markah*]

Graph of the total number of bubbles against the light intensity
Graf bagi jumlah bilangan gelembung melawan keamatan cahaya



~ I never dreamed about success, I worked for it. ~

(ii) Use the graph paper provided on page 36 to answer this part of the question.
Using the data in **1**(*f*)(i), draw the graph of the total number of bubbles against the light intensity. [3 *marks*]
Guna kertas graf yang disediakan di halaman 36 *untuk menjawab ceraian soalan ini.*
Menggunakan data di **1**(*f*)(i), *lukis graf jumlah bilangan gelembung melawan keamatan cahaya.* [3 *markah*]

(*g*) Based on the graph in **1**(*f*)(ii), explain the relationship between the total number of bubbles and the light intensity.
Berdasarkan graf di **1**(*f*)(ii), *terangkan hubungan antara jumlah bilangan gelembung dengan keamatan cahaya.*

When the light intensity increases, the total number of bubbles released increases because the rate of photosynthesis increases and more oxygen is produced.

[3 *marks*]
[3 *markah*]

(*h*) This experiment is repeated using two sprigs of *Hydrilla* sp.
Predict the total number of bubbles released in 5 minutes by these two sprigs of *Hydrilla* sp.
Explain your prediction.
Eksperimen ini diulangi dengan menggunakan dua tangkai Hydrilla sp.
Ramalkan jumlah bilangan gelembung yang dibebaskan dalam masa 5 *minit oleh dua tangkai Hydrilla* sp.
Terangkan ramalan anda.

Total number of bubbles released increases because two sprigs have more leaves and the rate of photosynthesis increases.

[3 *marks*]
[3 *markah*]

(*i*) Based on the result from this experiment, what can be deduced about photosynthesis?
Berdasarkan keputusan daripada eksperimen ini, apakah yang dapat dirumuskan tentang fotosintesis?

Photosynthesis is a total number of bubbles released by Hydrilla sp. that is placed in 2% sodium hydrogen carbonate solution in 5 minutes which is affected by distance from light source.

[3 *marks*]
[3 *markah*]

Borang Maklum Balas Sesi Seminar SPM BACfreeschool

Sila lengkapkan borang penilaian bagi Seminar SPM yang telah anda hadiri. Penilaian anda dapat membantu kami memahami tahap keberkesanan program ini dan seterusnya membolehkan kami meningkatkan kualiti perkhidmatan kami di masa hadapan.

Terima kasih!

Please fill up this form for the session that you are attending. Your evaluation will help us improve our service and help us understand the effectiveness of this program.

Thank you!

1. Nombor Telefon
Phone Number

2. Apakah subjek bagi seminar yang sedang anda sertai sekarang?
What is the seminar's subject that you're attending now?

- ◯ Bahasa Malaysia
- ◯ English
- ◯ Sejarah
- ◯ Sains
- ◯ Science
- ◯ Matematik
- ◯ Mathematics
- ◯ Biologi
- ◯ Biology
- ◯ Kimia
- ◯ Chemistry
- ◯ Fizik
- ◯ Physics
- ◯ Matematik Tambahan
- ◯ Additional Maths
- ◯ Perniagaan
- ◯ Prinsip Perakaunan
- ◯ Ekonomi

3. Pernahkah anda menonton mana-mana video BACfreeschool (sebelum ini dikenali sebagai EduNation)?
Have you ever watched any BACFreeschool's (previously known as EduNation) videos?

- ◯ Ya
  Yes
- ◯ Tidak
  No

4. Nilai kefahaman guru terhadap isi kandungan yang diajar bagi subjek ini.
Rate the teacher's understanding of this particular subject.

Sangat Rendah *Very Low*	Rendah *Low*	Sederhana *Intermediate*	Tinggi *High*	Sangat Tinggi *Very High*
◯	◯	◯	◯	◯

5. Nilai cara penyampaian guru bagi subjek ini.
Rate the teacher's delivery of the subject.

Sangat Tidak Menarik *Very Uninteresting*	Tidak Menarik *Not Interesting*	Sederhana *Intermediate*	Menarik *Interesting*	Sangat Menarik *Very Interesting*
◯	◯	◯	◯	◯

6. Nilai tahap kepuasan terhadap nota tambahan yang telah diberikan.
Rate your satisfaction level with the notes given.

Sangat Tidak Berpuashati *Very Unsatisfied*	Tidak Berpuashati *Not Satisfied*	Sederhana *Intermediate*	Berpuashati *Satisfied*	Sangat Berpuashati *Very Satisfied*
◯	◯	◯	◯	◯

7. Nilai tahap kebergunaan isi kandungan seminar.
Rate the usefulness of the seminar's content to your SPM preparation.

Sangat Tidak Berguna *Not Very Useful*	Tidak Berguna *Not Useful*	Sederhana *Intermediate*	Useful *Berguna*	Sangat Useful *Very Useful*
◯	◯	◯	◯	◯

8. Bagi pendapat anda, 3 jam untuk satu sesi seminar adalah...
In your opinion, 3 hours per session is...

- ◯ terlalu pendek.
  too short.
- ◯ bersesuaian.
  just right.
- ◯ terlalu panjang.
  too long.

9. Adakah anda mempunyai sebarang maklum balas/komen bagi meningkatkan prestasi kami?
Do you have any additional comments, questions, or concerns you would like to share?