

Answer **all** the questions

Jawab **semua** soalan

- 1 An experiment is carried out to study the effect of concentration of nutrients on yeast activity. Diagram 1.1 shows the method used by the students. The initial height of the coloured liquid in the manometer is shown in Diagram 1.2. The experiment was repeated using different concentrations of glucose. Table 1.1 shows the results of the experiment after 10 minutes.

Satu eksperimen telah dijalankan untuk mengkaji kesan kepekatan nutrien ke atas aktiviti yis.

Rajah 1.1 menunjukkan kaedah yang dilakukan oleh pelajar-pelajar tersebut.

Bacaan awal cecair berwarna dalam tiub manometer ditunjukkan seperti Rajah 1.2.

Eksperimen ini diulang dengan menggunakan kepekatan glukosa yang berbeza. Jadual 1.1 menunjukkan keputusan eksperimen selepas 10 minit.

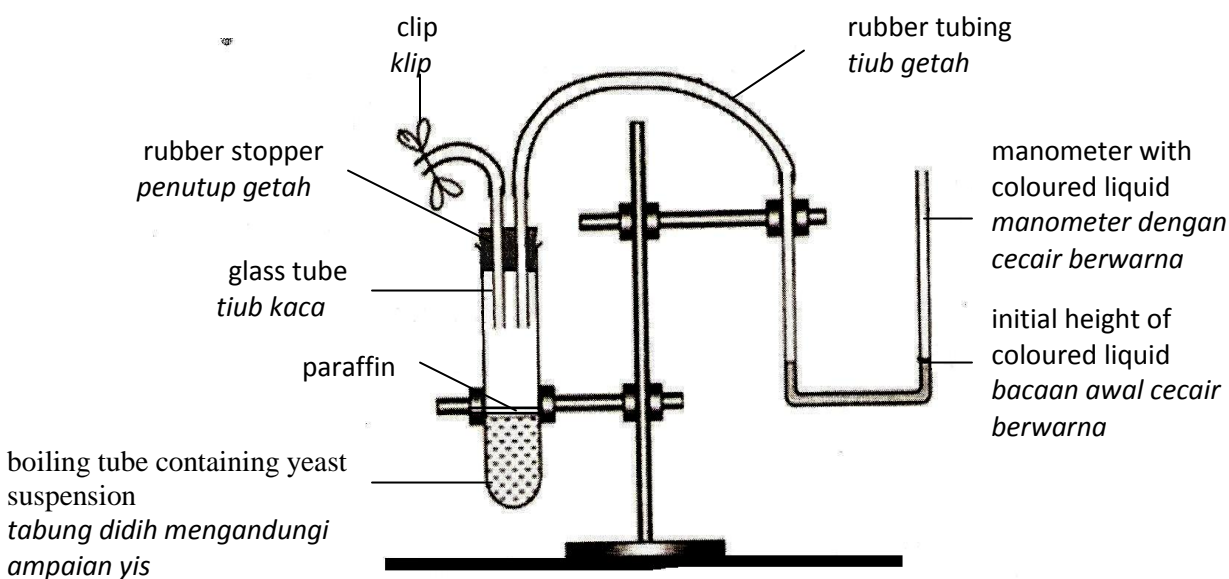


Diagram 1.1

Rajah 1.1

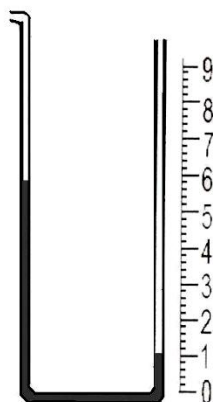


Diagram 1.2

Rajah 1.2

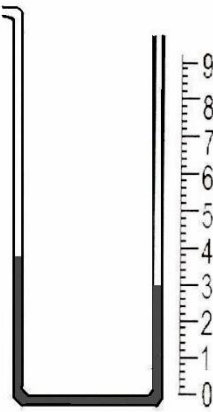
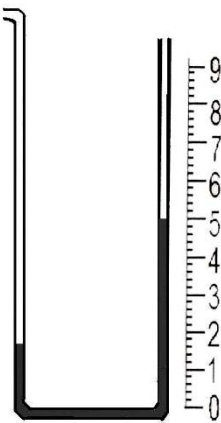
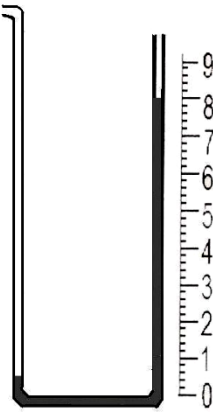
Percentage concentration of glucose <i>Peratus kepekatan glukosa / %</i>	Final height of coloured liquid in the manometer <i>Bacaan akhir cecair berwarna dalam manometer /cm</i>
10	
15	
20	

Table 1.1
Jadual 1.1

- a) (i) Based on Table 1.1, state **two** observations .

*Berdasarkan Jadual 1.1, nyatakan **dua** pemerhatian.*

Observation 1 :

Pemerhatian 1:

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Observation 2 :

Pemerhatian 2

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.....

[3 marks/ markah]

☐

- (ii) State the inferences which correspond to the observations in 1(a)(i).

Nyatakan inferen yang sepadan dengan pemerhatian di 1(a)(i)

Inference from observation 1 :

Inferen daripada pemerhatian 1:

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Inference from observation 2 :

Inferen daripada pemerhatian 2:

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.....

[3 marks/ markah]

☐

- (b) Using the information provided in Table 1.1, complete Table 1.2 by recording the height of coloured liquid in the manometer after 10 minutes.

Menggunakan maklumat dalam Jadual 1.1, lengkapkan Jadual 1.2 dengan merekodkan jarak kenaikan cecair berwarna selepas 10 minit.

Percentage concentration of glucose <i>Peratusan kepekatan glukosa / %</i>	The height of coloured liquid <i>Bacaan akhir cecair berwarna /cm</i>
10	
15	
20	

Table 1.2
Jadual 1.2

☐

[3 marks/ markah]

(c) (i) Complete Table 1.3 for the three variables based on the experiment.

Lengkapkan Jadual 1.3 bagi ketiga-tiga pembolehubah berdasarkan eksperimen ini.

Variable <i>Pembolehubah</i>	Method to handle the variable <i>Cara mengendali pembolehubah</i>
Manipulated variable: <i>Pembolehubah dimanipulasi :</i>
Responding variable: <i>Pembolehubah bergerakbalas</i>
Controlled variable : <i>Pembolehubah dimalarkan :</i>

Table 1.3
Jadual 1.3

[3 marks / markah]



- (ii) The following list is part of the apparatus and materials used in this experiment.

Senarai berikut adalah sebahagian daripada radas dan bahan yang digunakan dalam eksperimen ini.

yeast , metre rule, coloured liquid, electronic balance, glucose solution,
measuring cylinder
*yis , pembaris, cecair berwarna , penimbang elektronik , larutan glukosa,
silinder penyukat*

Complete Table 1.4 by matching each variable with the apparatus and materials used in the experiment.

Lengkapkan Jadual 1.4 dengan memadankan setiap pembolehubah dengan radas dan bahan yang digunakan dalam eksperimen ini.

Variables <i>Pembolehubah</i>	Apparatus <i>Radas</i>	Materials <i>Bahan</i>
Manipulated <i>Dimanipulasi</i>
Responding <i>Bergerakbalas</i>
Controlled <i>Dimalarkan</i>

Table 1.4
Jadual 1.4

[3 marks/ markah]

- (d) State the hypothesis for the experiment.
Nyatakan hipotesis bagi eksperimen ini.

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[3 marks / markah]

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- (e)(i) Based on Table 1.1, construct a table and record the results of the experiment which includes the following aspects:

Berdasarkan Jadual 1.1, bina satu jadual dan rekodkan keputusan eksperimen yang meliputi aspek-aspek berikut :

- Percentage concentration of glucose
Peratusan kepekatan larutan glukosa
- The rate of the yeast activity
Kadar tindakbalas aktiviti yis

[3 marks/ markah]

- (ii) Draw a graph of the rate of the activity of yeast against the concentration of glucose.

Lukis graf kadar tindak balas aktiviti yis melawan kepekatan glukosa.

[3 marks / markah]

- (iii) Explain the relationship between the rate of the activity of yeast and the concentration of glucose based on the graph in 1(e)(ii).

Terangkan hubungan antara kadar tindak balas aktiviti yis dan kepekatan glukosa berdasarkan graf di 1(e)(ii)

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[3 marks/ markah]

- (f) Based on the experiment, define operationally respiration of the yeast.

Berdasarkan eksperimen ini, definisikan respirasi yis secara operasi .

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[3 marks/ markah]

- (g) The experiment is repeated by using the apparatus set up in Diagram 1.3 with 10% glucose. 1 ml of 0.1 mol dm^{-3} of sodium hydroxide solution is added into the boiling tube. The experiment is left for 10 minutes.

Eksperimen ini diulang dengan menggunakan radas seperti Rajah 1.3 dengan kepekatan glukosa 10%. 1 ml larutan natrium hidroksida 0.1 mol dm^{-3} ditambahkan ke dalam tabung didih. Eksperimen ini dibiarkan selama 10 minit.

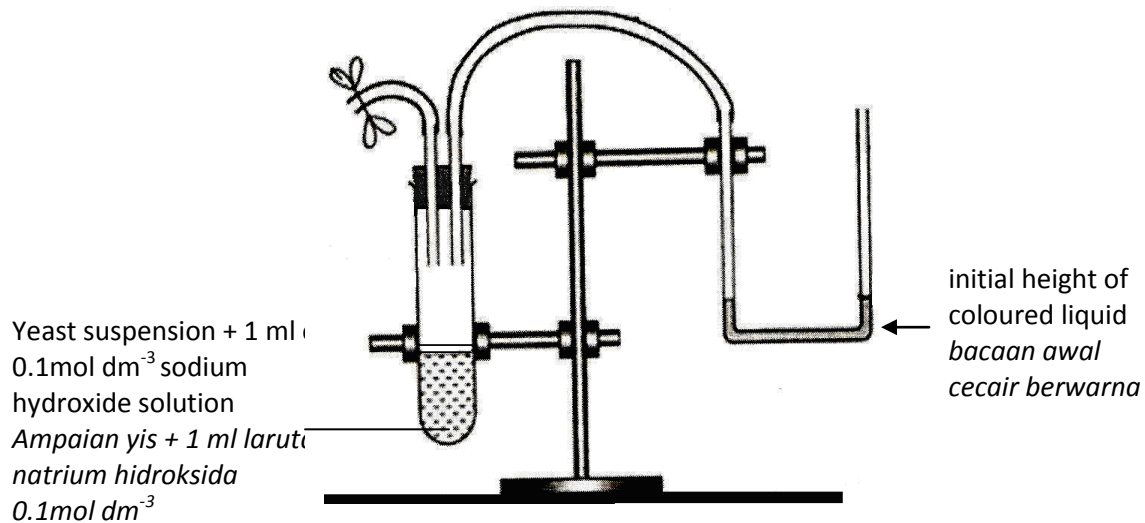
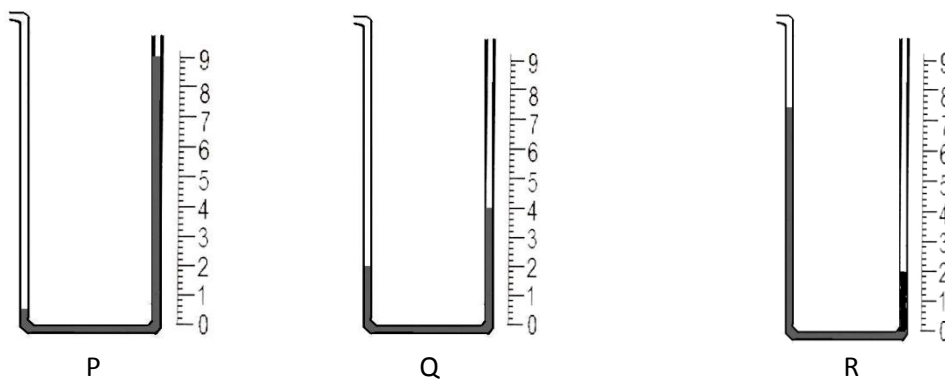


Diagram 1.3

Rajah 1.3

P, Q and R are three possible observations. Choose **one** correct observation and explain your choice.

*P, Q dan R adalah tiga kemungkinan pemerhatian. Pilih **satu** pemerhatian yang betul dan terangkan pilihan anda.*



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[3 marks / markah]

2. Multicellular organisms are bigger and complex. The cells cannot depend on diffusion alone to obtain its requirements. Multicellular organisms need the transport system to transport respiration gaseous and nutrient to the inner part of the body. Whereas, unicellular organisms get their gaseous and nutrients supply by diffusion through their cell membrane because their total surface area per volume are big.

Based on the above information, plan a laboratory experiment to study the relationship between the size of organisms and the rate of diffusion.

The planning of your experiment must include the following aspects:

Organisma multisel adalah besar dan kompleks. Sel-sel tidak boleh bergantung kepada proses resapan sahaja untuk mendapatkan keperluannya. Organisma multisel memerlukan sistem pengangkutan untuk mengangkut gas-gas respirasi dan bahan nutrien ke bahagian dalam seluruh tubuhnya. Manakala, organisma unisel mendapatkan bekalan gas respirasi dan bekalan nutrienya secara resapan menerusi membran sel kerana jumlah luas permukaan per isipadunya yang besar.

Berdasarkan maklumat diatas, reka bentuk satu eksperimen makmal untuk menentukan hubungan antara saiz organism dan kadar resapan.

Perancangan eksperimen anda hendaklah meliputi aspek-aspek berikut:

- Problem statement
Pernyataan masalah
- Hypothesis
Hipotesis
- Variables
Pembolehubah
- List of apparatus and materials
Senarai radas dan bahan
- Experimental procedure
Prosedur eksperimen
- Presentation of data
Persembahan data

[17 marks/markah]

**END OF QUESTIONS
KERTAS SOALAN TAMAT**