NAMA : ..... TINGKATAN : .....

SULIT
4551/3
Biology
Kertas 3
Ogos 2015
1 ½ jam

MODUL PENINGKATAN PRESTASI TINGKATAN 5

TAHUN 2015

MAJLIS PENGETUA SEKOLAH MALAYSIA (KEDAH)

MODUL 2

BIOLOGI

Kertas 3

Satu Jam Tiga Puluh Minit

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIBERITAHU

1. *Kertas soalan ini adalah dalam dwibahasa*
2. *Soalan dalam bahasa Inggeris mendahului soalan sepadan dalam bahasa Melayu.*
3. *Calon dibenarkan menjawab keseluruhan atau sebahagian soalan sama ada dalam bahasa Inggeris atau bahasa Melayu*

Untuk Kegunaan Guru Pemeriksa		
Nama Pemeriksa :		
Soalan	Markah Penuh	Markah Diperoleh
1	33	
2	17	
Jumlah	50	

Kertas soalan ini mengandungi 11 halaman bercetak

[Lihat halaman sebelah

SULIT

Question/ *Soalan* 1

An experiment was carried out to study the effect of different concentration of sucrose solution on the mass of visking tubing.
Satu eksperimen telah dijalankan untuk mengkaji kesan kepekatan larutan sukrosa yang berbeza ke atas jisim tiub visking.

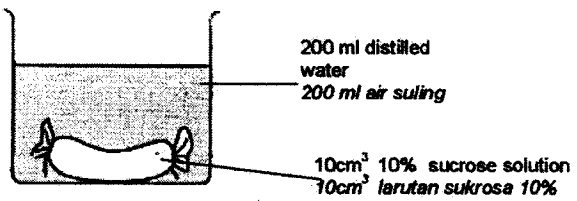
Step/ langkah 1:
A visking tubing is cut at 15 cm long. Then the visking tubing is immersed in water for five minutes to soften it. One end of the visking tubing is tied by using a thread.
Satu tiub visking dipotong sepanjang 15 cm panjang. Kemudian tiub visking itu direndamkan ke dalam air selama lima minit untuk melembutkannya. Satu hujung tiub visking diikat dengan benang.

Step / langkah 2:
The visking tubing is filled with $10cm^3$ of 10% concentration of sucrose solution. Then the other end of visking tubing is tied by using another thread.
Tiub visking diisi dengan $10cm^3$ larutan sukrosa dengan kepekatan 10%. Kemudian tiub visking diikat dengan benang yang lain dihujung satu lagi.

Step / langkah 3:
The outer surface of visking tubing is rinsed with water. The visking tubing is immersed in a beaker contains 200ml of distilled water for 30 minutes as shown in Diagram 1.1
Bahagian luar permukaan tiub visking dibilas dengan air. Tiub visking direndamkan ke dalam bikar yang mengandungi 200ml air suling seperti ditunjukkan dalam rajah 1.1

Step/ *langkah* 4:
After 30 minutes the visking tubing is taken out and dried by using a tissue. Then it is weight by using electronic balance. The result were recorded in a table.
Selepas 30 minit, tiub visking dikeluarkan dan dikeringkan dengan menggunakan tisu. Kemudian ditimbang dengan menggunakan penimbang elektronik. Data direkodkan ke dalam jadual.

Step / *langkah* 5 :
The experiment is repeated by using different concentrations of sucrose solution which are 20%, 30% and 40%.
Eksperimen diulang dengan menggunakan larutan sukrosa yang berbeza kepekatan iaitu 20%,30% dan 40% .



Diagram/ *Rajah* 1.1

Table 1.3 shows the result of this experiment.
Jadual 1.3 menunjukkan keputusan eksperimen ini.

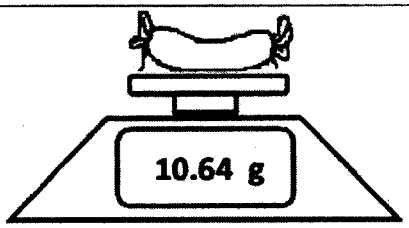
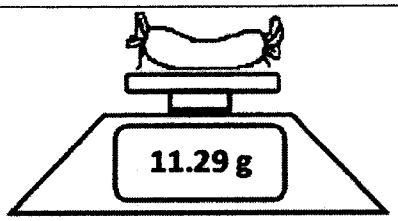
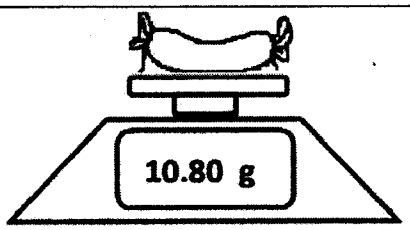
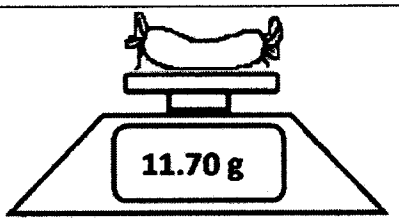
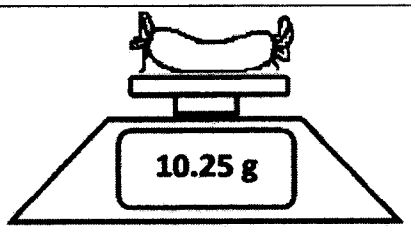
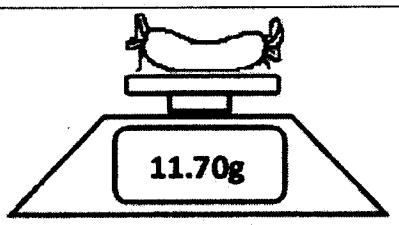
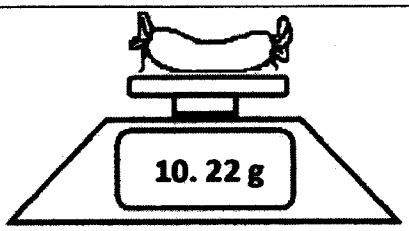
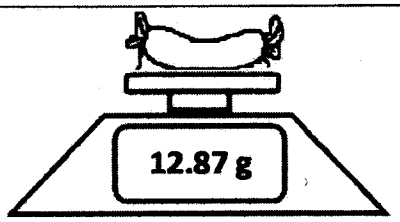
Concentration of sucrose solution *Kepekatan larutan sukrosa (%)*	Mass of visking tubing Jisim tiub visking (g)		Difference in mass of visking tubing after 30 minutes *Perbezaan jisim tiub visking selepas 30 minit* (g)
	Initial Mass *Jisim awal*	Final Mass *Jisim akhir*	
10			
20			
30			
40			

Table / *Jadual* 1.3

(a) Record the difference in mass of the visking tubing in the space provided in Table 1.3.
Rekodkan perbezaan jisim tiub visking dalam ruangan yang disediakan dalam Jadual 1.3. [3 markah / *marks*]

(b) (i) State **two** different observations based on Table 1.
*Nyatakan **dua** pemerhatian yang berbeza berdasarkan Jadual 1.*

Observation / *Pemerhatian 1*:

.....

.....

.....

Observation / *Pemerhatian 2 :*

.....

.....

.....

[3 markah / *marks*]

(ii) State inference from the observation in (b)(i)
Nyatakan inferens daripada pemerhatian di (b)(i)

Inference / *Inferens 1* :

.....

.....

.....

Inference / *Inferens 2*:

.....

.....

.....

[3 markah / *marks*]

(c) *Complete Table 2 based on this experiment .*
Lengkapkan Jadual 2 berdasarkan eksperimen ini.

Variables *Pembolehubah*	Method to handle the variables *Cara pengendalian pembolehubah*
Manipulated variable *Pembolehubah dimanipulasi*:	....
Responding variable *Pembolehubah bergerakbalas*:	....
Constant variable *Pembolehubah dimalarkan*:	....

[3 marks / *markah*]

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

.....

.....

.....

[3 markah / *marks*]

(e) (i) Construct a table and record all the data collected in this experiment. Your table should have the following aspects:
Bina satu jadual dan rekodkan semua data yang dikumpulkan dalam eksperimen.Jadual anda hendaklah mengandungi aspek-aspek berikut:

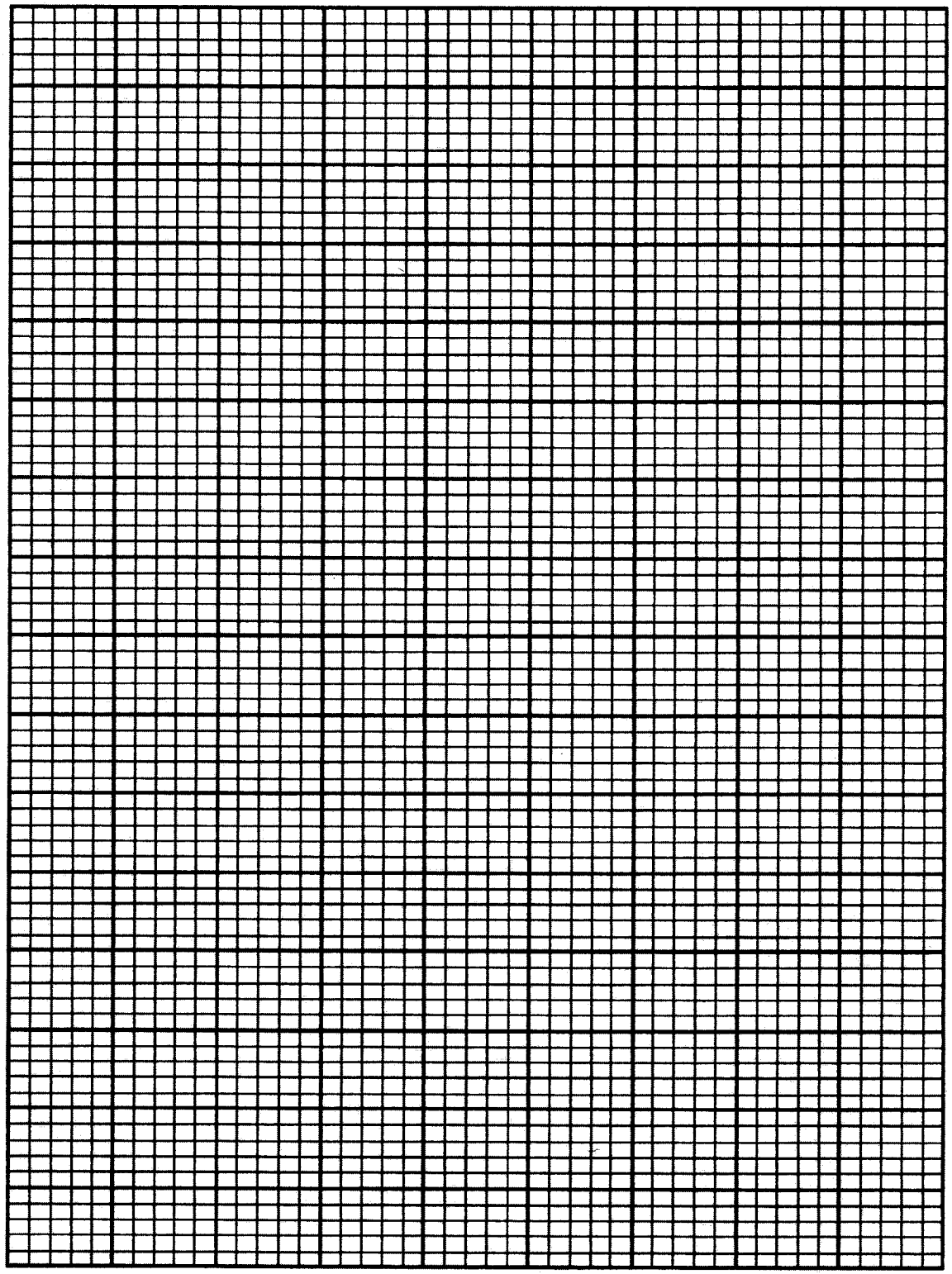
- Concentration of sucrose solution */Kepekatan larutan sukrosa*
- Initial mass of visking tubing / *Jisim awal tiub visking*
- Final mass of visking tubing / *Jisim akhir tiub visking*
- Difference in mass of visking tubing / *Perbezaan jisim tiub visking*
- *Rate of osmosis / Kadar Osmosis*

Rate of osmosis = $\frac{\text{(Final mass/ Jisim akhir – Initial mass / Jisim awal)}}{\text{Time taken / Tempoh masa}}$ (gmin^{-1})

[3 markah / *marks*]

(ii) Using the data in 1(e)(i), draw a graph of rate of osmosis against the concentrations of the sucrose solution.
Dengan menggunakan data di 1(e)(i), lukis satu graf kadar osmosis melawan kepekatan larutan sukrosa.

[3 markah / *3 marks*]



(f) Based on the graph in 1 (e)(ii), state the relationship between the concentration of the sucrose solution to the rate of osmosis. Explain your answer.
Berdasarkan graf di 1 (e)(ii), nyatakan hubungan kepekatan larutan sukrosa dengan kadar osmosis. Terangkan jawapan anda.

.....

.....

.....

[3 markah / *marks*]

(g) The visking tubing with 20% concentration of sucrose solution is taken out and then being immersed in 200 ml of 60 % concentration of sucrose solution for 30 minutes. Based on the result of this experiment, predict the final mass of visking tubing. Explain your prediction.
Tiub visking dengan kepekatan larutan sukrosa 20% dikeluarkan dan direndamkan ke dalam larutan sukrosa kepekatan 60% selama 30 minit. Berdasarkan keputusan eksperimen ini, ramalkan jisim akhir tiub visking tersebut. Terangkan ramalan anda.

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.....

[3 markah / *marks*]

(h) Based on this experiment, state the operational definition for osmosis.
Berdasarkan eksperimen ini, nyatakan definisi secara operasi bagi osmosis.

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.....

.....

[3 markah / *marks*]

(i) In another experiment, it was found that a mustard stem strip that was immersed in 0.80% natrium chloride did not undergo a change in mass.
Dalam eksperimen lain, didapati bahawa satu jalur batang sawi yang telah direndam dalam larutan natrium klorida 0.80% tidak mengalami perubahan jisim.

The following solutions are used in this experiment
Larutan berikut telah digunakan dalam eksperimen ini.

0.25% sodium chloride solution, 0.80% sodium chloride solution, 1.10% sodium chloride solution *0.25% larutan natrium klorida, 0.80% natrium klorida, 1.10% larutan natrium klorida*

Classify the above solution into Table 3.
Klasifikasikan larutan di atas ke dalam Jadual 3.

Solution concentration *Kepekatan larutan (%)*	Types of solution compared to the osmotic concentration of the cell sap *Jenis larutan berbanding kepekatan osmotic sap sel*

[3 markah / *marks*]

Question / *Soalan 2*

The level of water pollution can be tested by using the Biochemical Oxygen Demand (BOD) value. At high BOD value the dissolved oxygen in the water is less, more anaerobic bacteria are present and the water is polluted.

Aras pencemaran air boleh diuji menggunakan nilai Keperluan Oksigen Biokimia (BOD). Pada nilai BOD yang tinggi oksigen terlarut dalam air adalah rendah, banyak bakteria anaerobik dan air adalah tercemar.

Villages P, Q and R are situated along the Sungai Muda, 5 km, 10 km and 20 km respectively from Keropok Factory. Lately the villages folk feel not comfortable with the quality of the environment especially the quality of water.

Kampung P , Q dan R yang terletak di sepanjang Sungai Muda , 5 km, 10 km dan 20 km masing-masing dari Kilang Keropok . Akhir-akhir ini orang kampung berasa tidak selesa dengan kualiti alam sekitar terutamanya kualiti air.

A group of student carried out an experiment to study the level of water pollution at a river stream . Water samples from station P, Q and R are tested for this experiment.

Sekumpulan pelajar telah menjalankan satu eksperiment untuk mengkaji aras pencemaran air di suatu aliran sungai. Sampel-sampel air dari stesen P, Q dan R telah diuji dalam eksperimen ini.

Design an experiment in the laboratory to study the level of water pollution at the different stations of river stream as shown in Diagram 2.

Rekabentuk satu eksperimen di dalam makmal untuk mengkaji aras pencemaran air di stesen –stesen yang berlainan pada aliran sungai seperti yang ditunjukkan dalam Rajah 2.

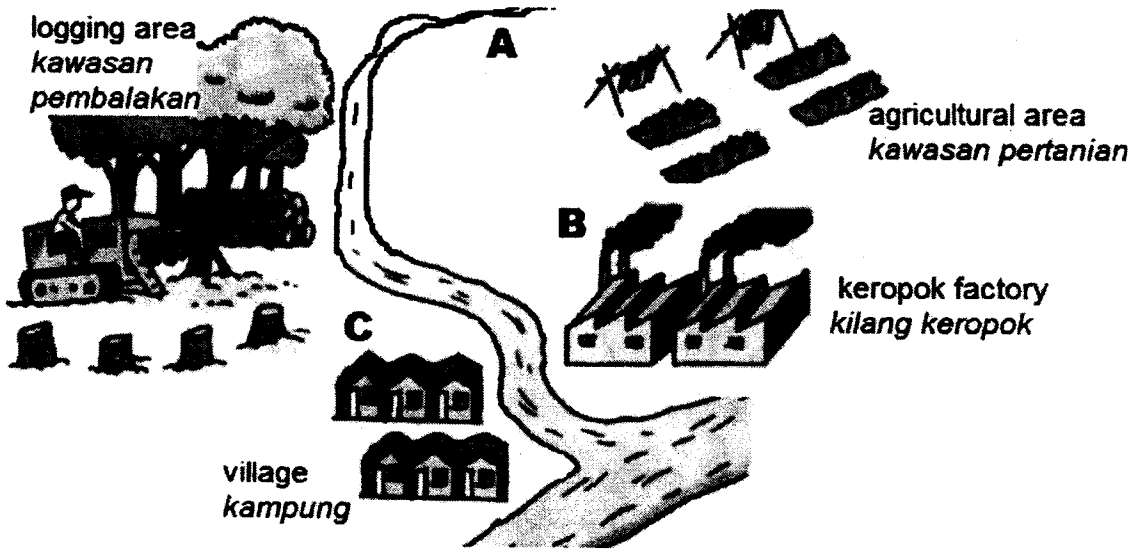

Diagram 2 / *Rajah 2*

The planning of your experiment should include the following aspect:
Rancangan eksperimen anda hendaklah mengandungi aspek berikut:

- Problem statement
  Pernyataan Masalah
- Hypothesis
  Hipotesis
- Variable
  Pembolehubah
- List of apparatus and materials
  Senarai radas dan bahan
- Experimental procedure
  Prosedur Eksperimen
- Presentation of Data
  Penyampaian Data

[17 *marks / markah*]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT