

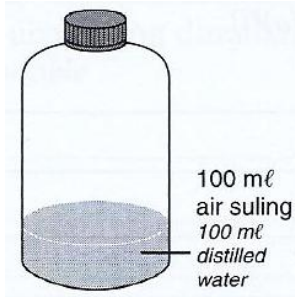
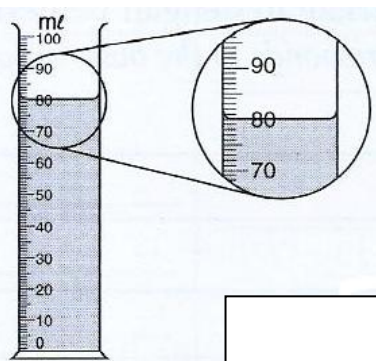
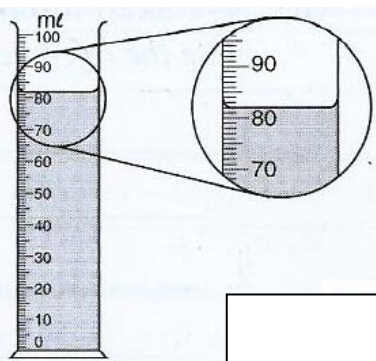

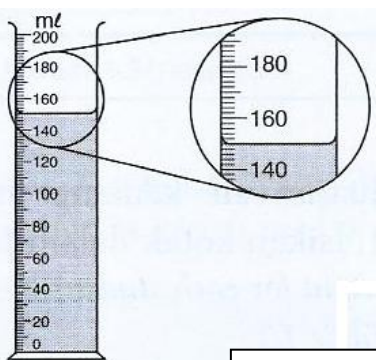
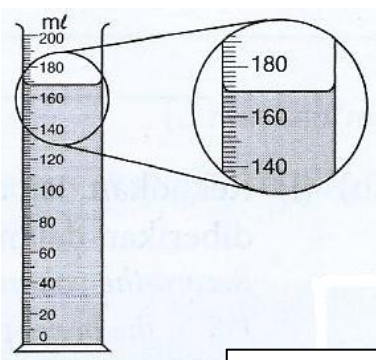
Answer **all** questions

- 1 An experiment to study osmoregulation in human was carried out by relating the volume of water intake to the volume of urine produced. Three groups of students which are group A, group B, group C and group D were given different volume of plain water to drink. After one hour, each student in the groups urinated and collected their urine in a measuring cylinder.

The volume of urine produced is recorded in Table 1.

Satu eksperimen untuk mengkaji pengosmokawalaturan dalam manusia telah dijalankan dengan mengaitkan isipadu air yang diminum dengan isipadu air kencing yang dihasilkan. Tiga kumpulan pelajar iaitu kumpulan A, kumpulan B, kumpulan C dan kumpulan D telah diberi air kosong yang berbeza isipadu untuk diminum. Selepas satu jam, setiap pelajar dalam kumpulan membuang air kecil dan men gumpulkan air kencing mereka di dalam silinder penyukat.

Isipadu air kencing yang dihasilkan dire kodkan dalam Jadual 1.

Group <i>Kumpulan</i>	Volume of water intake, ml <i>Isipadu air yang diminum ml</i>	Volume of urine produced, ml <i>Isipadu air kencing yang dihasilkan, ml</i>	
		Student 1 <i>Pelajar 1</i>	Student 2 <i>Pelajar 2</i>
A	 <p>100 ml air suling 100 ml distilled water</p>	 <input type="text"/>	 <input type="text"/>
B	 <p>200 ml air suling 200 ml distilled water</p>	 <input type="text"/>	 <input type="text"/>

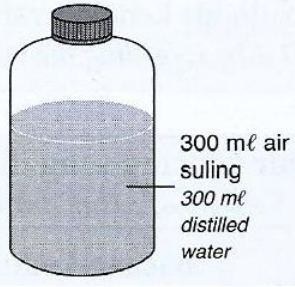
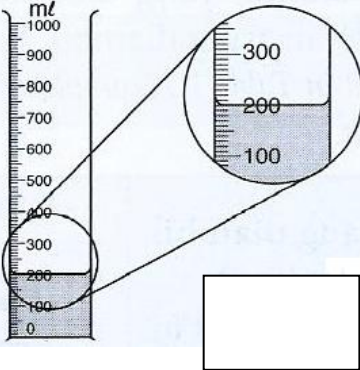
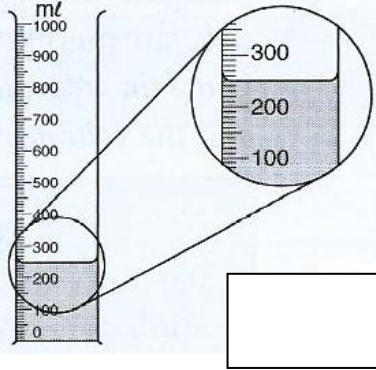

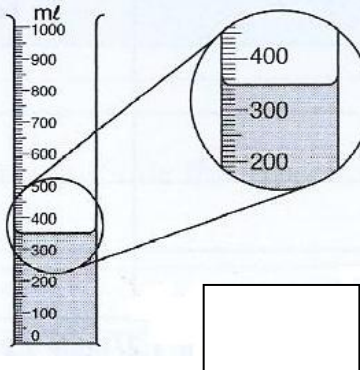
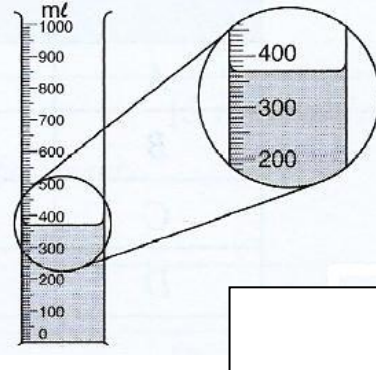
Group <i>Kumpulan</i>	Volume of water intake, ml <i>Isipadu air yang diminum ml</i>	Volume of urine produced, ml <i>Isipadu air kencing yang dihasilkan, ml</i>	
		Student 1 <i>Pelajar 1</i>	Student 2 <i>Pelajar 2</i>
C	 <p>300 ml air suling 300 ml distilled water</p>		
D	 <p>400 ml air suling 400 ml distilled water</p>		

Table 1 / *Jadual 1*

- (a) Record the volume of the urine produced by each student in group A, B, C and D and the average volume of the urine in the spaces provided in Table 1.

Rekodkan isipadu air kencing yang dihasilkan oleh setiap pelajar dalam kumpulan A, B, C dan D serta isipadu purata air kencing di dalam ruang yang disediakan di Jadual 1.

[3 marks / 3 markah]

1(a)

- (b) (i) Based on Table 1, state two different observations that can be made in this experiment.

Berdasarkan Jadual 1, nyatakan dua pemerhatian yang berbeza yang boleh dibuat dalam eksperimen ml.

Observation 1:

Pemerhatian 1:

.....
.....

Observation 2:

Pemerhatian 2:

.....
.....

[3 marks / 3 markah]

1(b)(i)

- (ii) State the inferences which corresponds to the observations in 1(b)(i).

Nyatakan inferens yang sepadan dengan pemerhatian di 1(b)(i)

Inference from observation 1:

Inferen daripada pemerhatian 1:

.....
.....

Inference from observation 2:

Inferen daripada pemerhatian 2:

.....
.....

[3 marks / 3 markah]

1(b)(ii)

- (c) Complete Table 2 based on this experiment.
Lengkapkan Jadual 2 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 bergerak balas</i>
Constant variable <i>Pembolehubah dimalarkan</i>

Table 2 / *Jadual 2*

[3 marks / 3 markah]

1(c)

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

.....

[3 marks / 3 markah]

1(d)

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

Your table should contain the following titles:

Jadual anda hendaklah mengandungi tajuk-tajuk berikut:

- Volume of water intake / *Isipadu air yang diminum*
- Volume of urine produced by each student
Isipadu air kencing yang dihasilkan oleh setiap pelajar
- Average volume of urine produced
Purata isipadu air kencing yang dihasilkan

[3 marks / 3 markah]

1(e)(i)

- (ii) Use the graph paper provided on page 8 to answer this part of question.
Using the data in 1(e) (i), draw the graph of average volume of urine produced against the volume of water intake.

Gunakan kertas graf yang disediakan di muka surat 8 untuk menjawab soalan bahagian ini.

Menggunakan data 1(e) (i), lukiskan graf isipadu air kencing yang dihasilkan melawan isipadu air yang diminum.

[3 marks / 3 markah]

1(e)(i)

(f) Based on the graph in I (e) (ii), explain the relationship between the volume of water intake to the average volume of urine produced.

Berdasarkan graf di I (e)(ii), terangkan perhubungan antara isipadu air yang diminum dengan purata isipadu air kencing yang dihasilkan.

.....
.....
.....

[3 marks / 3 markah]

1(f)

(g) Another group of student is given 100 ml of dilute salt water.

Predict the average volume of urine produced after one hour.

Explain your prediction.

Sekumpulan pelajar lain telah diberi 100 ml air garam cair.

Ramalkan purata isipadu air kencing yang dihasilkan selepas satu jam.

Terangkan ramalan anda.

.....
.....
.....

[3 marks / 3 markah]

1(g)

(h) Based on the results from the experiment, what can be deduced about osmoregulation?

Berdasarkan keputusan eksperimen ml, apakah yang dapat dirumuskan tentang pengosmokawalaturan?

.....
.....
.....

[3 marks / 3 markah]

1(h)

- (i) The following is a list of materials and apparatus used in another experiment to study osmoregulation.

Berikut ialah senarai bahan dan radas yang digunakan dalam satu eksperimen yang lain bagi mengkaji pengosmokawalaturan.

Cup, beaker, measuring cylinder, students, stopwatch, mineral water
Cawan, bikar, silinder penyukat, pelajar-pelajar, jam randik, air mineral

Classify the apparatus and materials into their respective variables in Table 2.

Kelaskan bahan dan radas tersebut kepada pemboleh-pemboleh ubah yang sewajarnya di dalam Jadual 2.

	Manipulated Variables <i>Pemboleh ubah dimanipulasikan</i>	Responding Variable <i>Pemboleh ubah bergerakbalas</i>	Fixed Variable <i>Pemboleh ubah dimalarkan</i>
Apparatus / Materials			
<i>Radas/ Bahan</i>			

Table 2 / *Jadual 2*

[3 marks / 3 markah]

1(h)

TOTAL

2. A group of students were arguing about the vitamin C content in two type of drinks shown below. The Biology Teacher, Mrs Haffa Izzah asked them to give support for their argument by doing an experiment.

Sekumpulan pelajar bercanggah pendapat mengenai kandungan vitamin C dalam dua jenis minuman di bawah. Guru Biologi mereka, Pn Haffa Izzah, meminta supaya mereka menyokong pendapat masing-masing dengan menjalankan eksperimen.



Based on the above information, plan a laboratory experiment to determine the vitamin C concentration in a cordial drink and fresh juice drink.

Berdasarkan maklumat di atas, rancang satu eksperimen dalam makmal untuk menentukan kepekatan vitamin C antara minuman kordial dan minuman jus segar.

The planning of your experiment must include the following aspects:

Perancangan eksperimen anda hendaklah meliputi aspek-aspek berikut:

- Problem statement
Pernyataan masalah
- Hypothesis
Hipotesis
- Variables
Pemboleubah
- List of apparatus and material
Senarai radas dan bahan
- Experimental procedure or method
Kaedah atau prosedur eksperimen
- Presentation of data
Persembahan data

[17 marks / 17 markah]

**END OF QUESTIONS PAPER
KERTAS SOALAN TAMAT**