

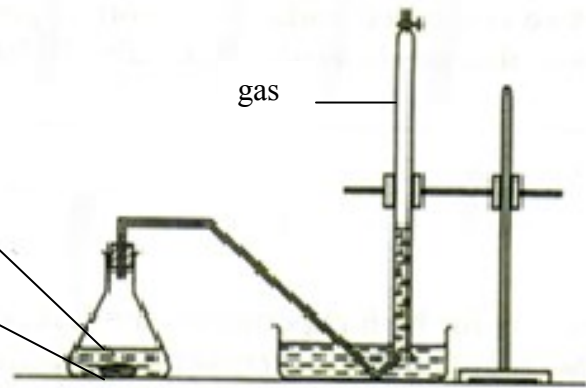
Answer **all** questions.
Jawab semua soalan

1. Diagram 1 shows the apparatus set-up for experiment I and experiment II that carried out by a student to investigate the effect of size of calcium carbonate on the rate of reaction. The experiment are conducted at room temperature.

Rajah 1 menunjukkan susunan radas bagi eksperimen I dan II yang telah dijalankan oleh seorang pelajar untuk mengkaji kesan saiz kalsium karbonat ke atas kadar tindak balas. Eksperimen dijalankan pada suhu bilik.

Experiment I
Eksperimen I

hydrochloric acid
asid Hidroklorik
5 g of large chips of calcium carbonate
5 g ketulan besar kalsium karbonat



Experiment II
Eksperimen II

hydrochloric acid
asid Hidroklorik
5 g calcium carbonate powder
5 g serbuk kalsium karbonat

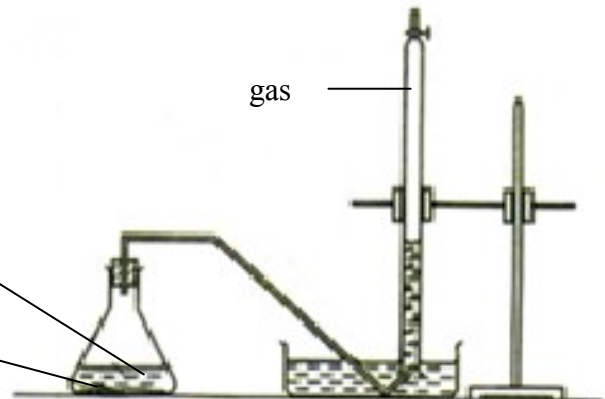
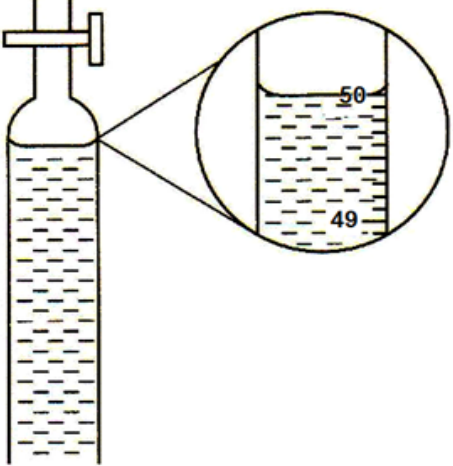
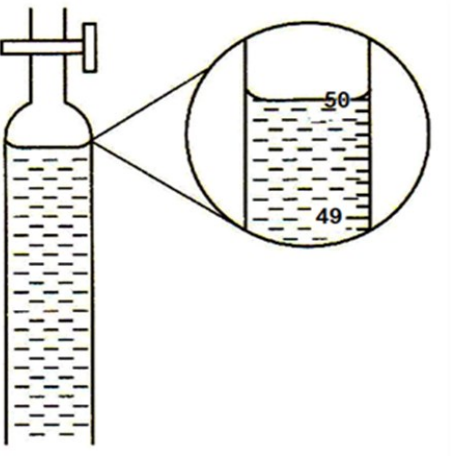
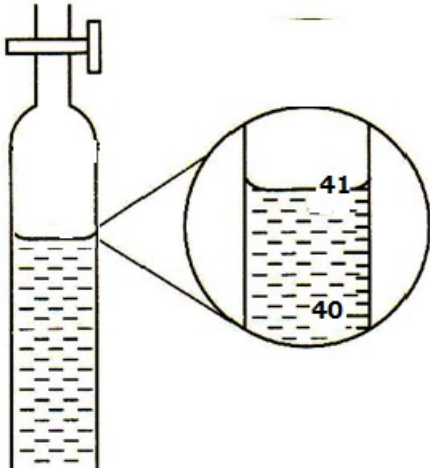


Diagram 1
Rajah 1

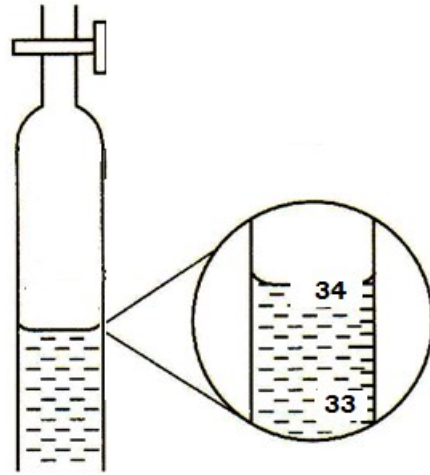
Diagram 1.1 shows the initial reading of burette at 0 second for Experiment I and Experiment II
Rajah 1.1 menunjukkan bacaan awal buret pada 0 saat bagi Eksperimen 1 dan Eksperimen II

 <p>Initial burette reading at 0 second <i>Bacaan awal buret pada 0 saat</i></p>	 <p>Initial burette reading at 0 second <i>Bacaan awal buret pada 0 saat</i></p>
<p>Experiment I <i>Eksperimen I</i></p>	<p>Experiment II <i>Eksperimen II</i></p>

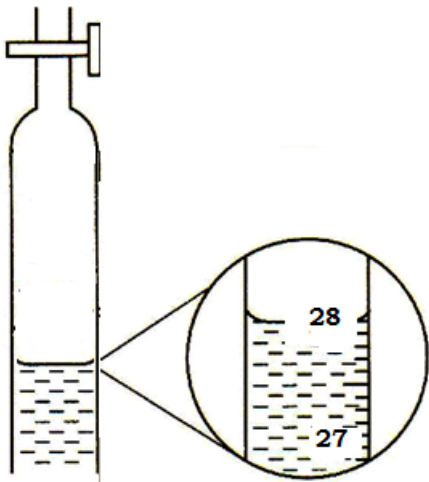
Experiment 1:



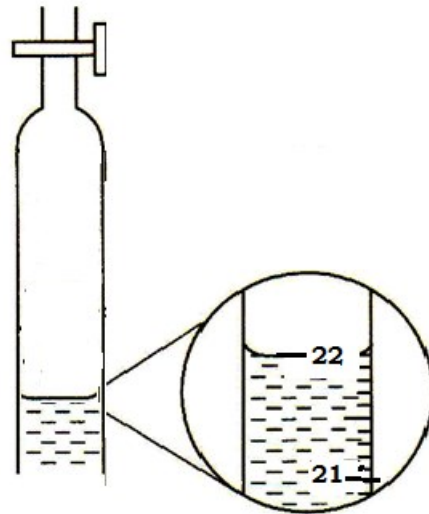
Burette reading at 60 second
Bacaan burette pada 60 saat



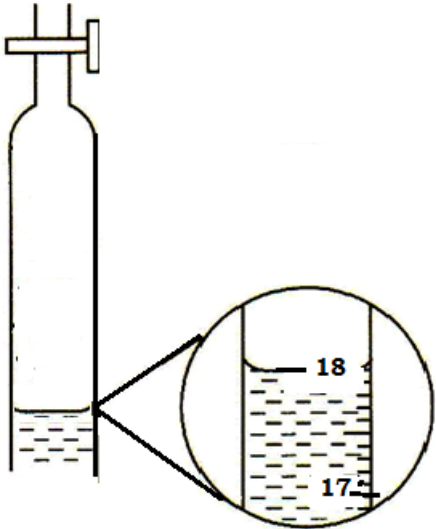
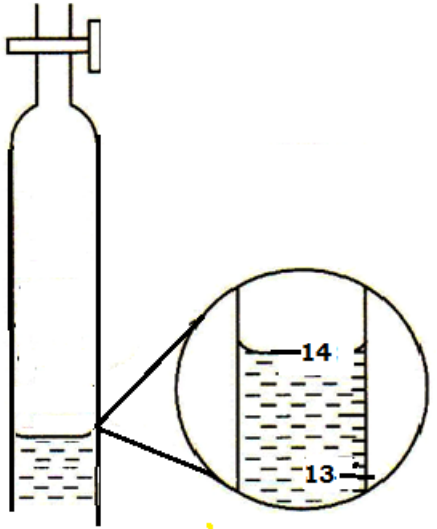
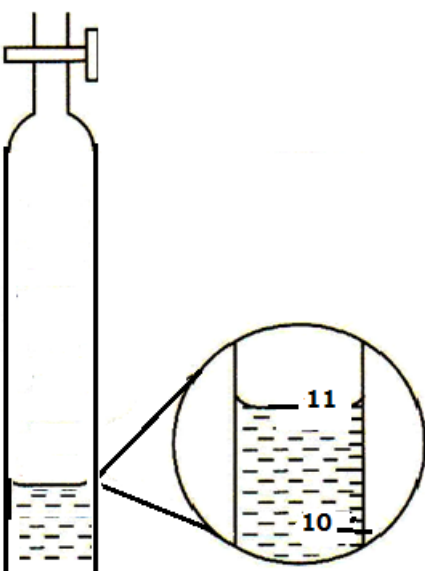
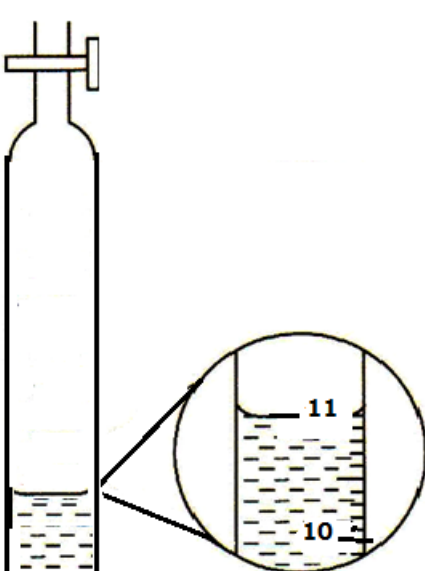
Burette reading at 120 second
Bacaan buret pada 120 saat



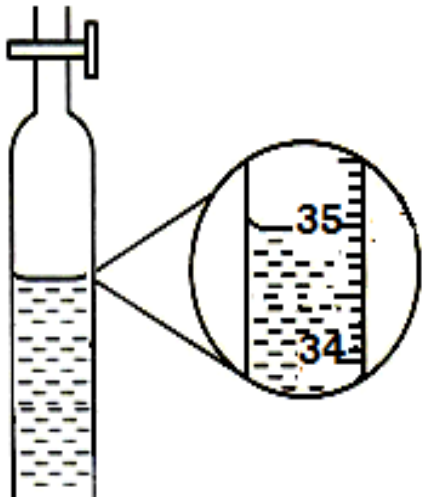
Burette reading at 180 second
Bacaan buret pada 180 saat



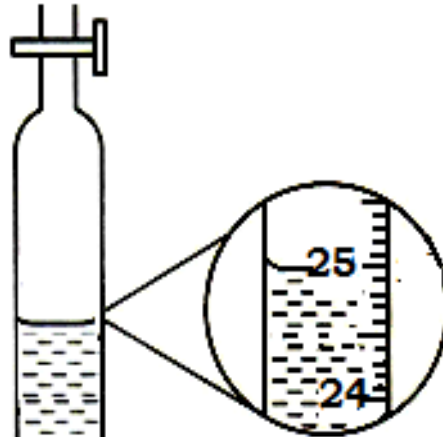
Burette reading at 240 second
Bacaan buret pada 240 saat

 <p>Burette reading at 300 second <i>Bacaan buret pada 300 saat</i></p>	 <p>Burette reading at 360 second <i>Bacaan buret pada 360 saat</i></p>
 <p>Burette reading at 420 second <i>Bacaan buret pada 420 saat</i></p>	 <p>Burette reading at 480 second <i>Bacaan buret pada 480 saat</i></p>

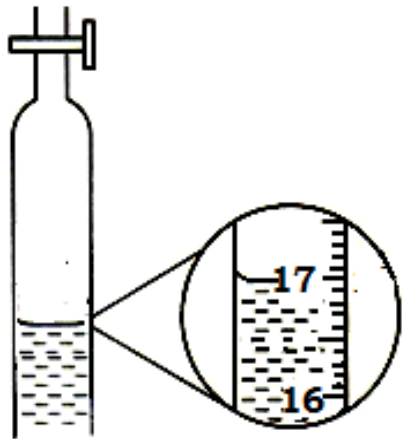
Experiment II



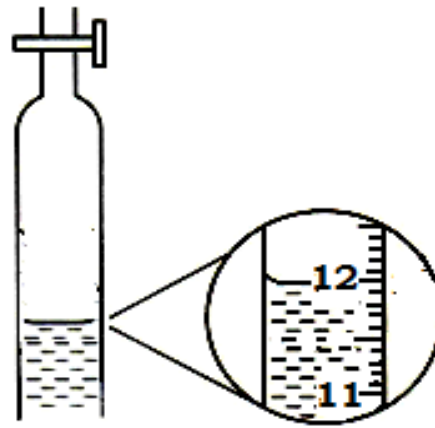
Burette reading at 60 second
Bacaan buret pada 60 saat



Burette reading at 120 second
Bacaan buret pada 120 saat



Burette reading at 180 second
Bacaan buret pada 180 saat



Burette reading at 240 second
Bacaan buret pada 240 saat

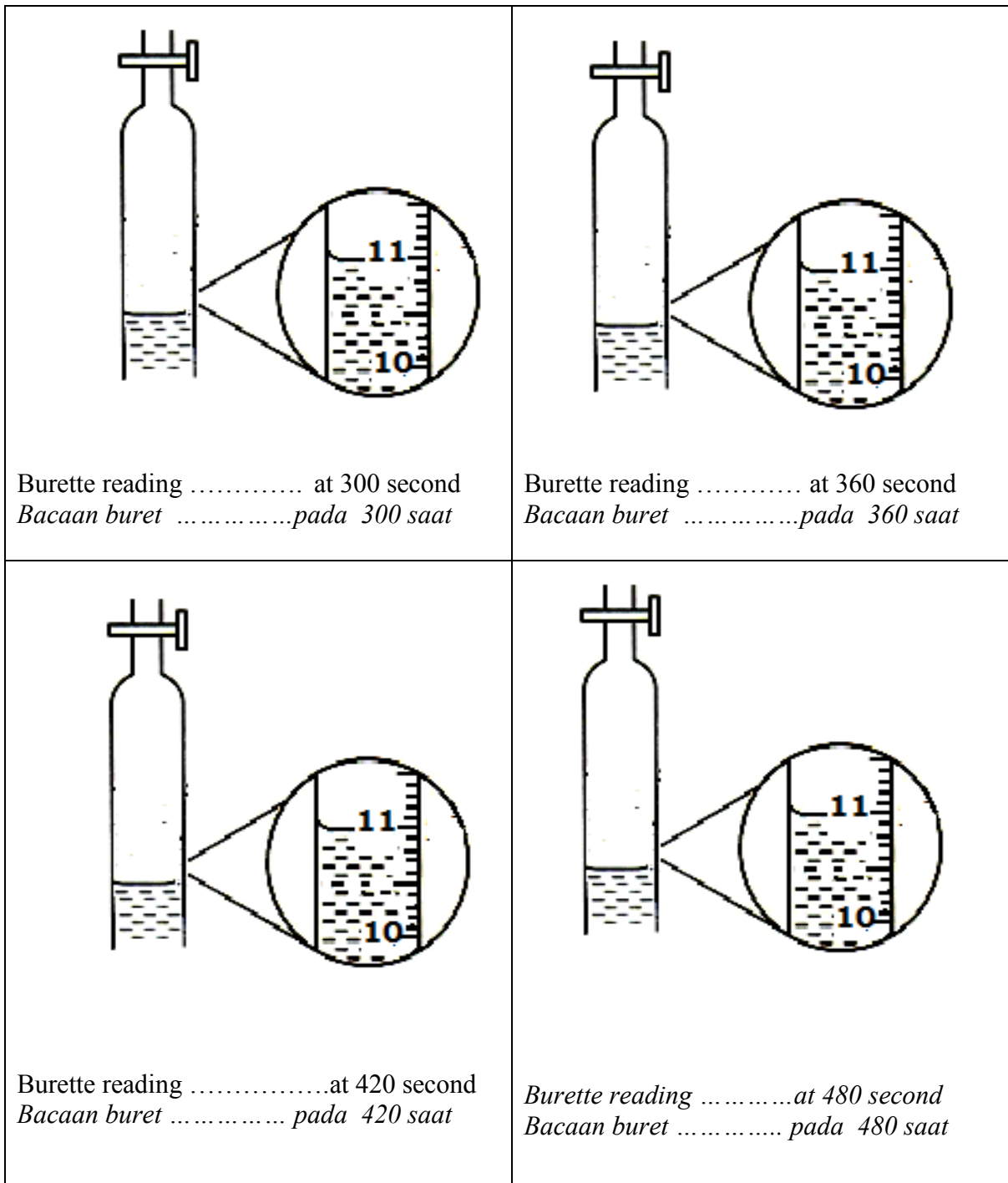


Diagram 1.1
Rajah 1.1

- (a) Diagram 1.1 shows the burette reading for experiment I and experiment II. Record the burette reading for experiment I and experiment II in the spaces provided

Rajah 1.1 menunjukkan bacaan buret untuk eksperimen I dan eksperimen II. Rekod bacaan buret bagi eksperimen I dan eksperimen II dalam ruangan yang disediakan.

- (b) (i) Construct a table showing the changes of time, burette readings and volume of carbon dioxide gas liberated for the experiments.

Bina satu jadual untuk menunjukkan perubahan masa, bacaan buret dan isipadu gas karbon dioksida terbebas bagi eksperimen ini

- (ii) Plot a graph of volume of carbon dioxide gas liberated against time for both experiment on the same axes.

Plotkan graf isipadu gas karbon dioksida terbebas melawan masa bagi kedua-dua eksperimen pada paksi yang sama.

- (c) In experiment I and experiment II, Predict a maximum volume and a time taken of carbon dioxide gas liberated and show on the same graph if the experiment is repeated using ethanoic acid.

Dalam eksperimen I dan eksperimen II, ramalkan isipadu maksimum dan masa yang diambil bagi gas karbon dioksida yang dikumpulkan dan tunjukkan pada graf yang sama sekiranya eksperimen diulang dengan menggunakan asid etanoik.

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1(a)

	3
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1(b) i

	3
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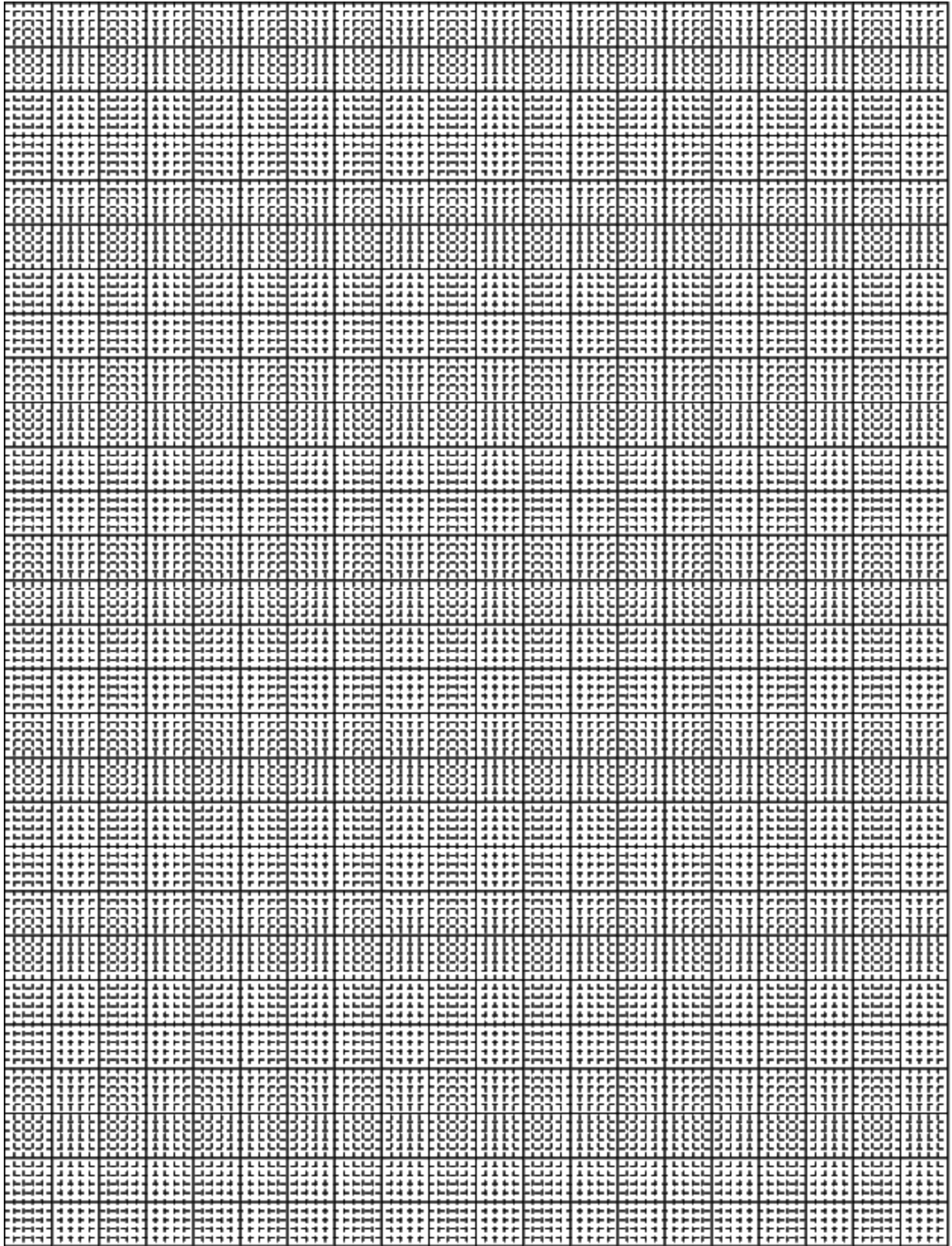
1(b) ii

	3
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1 (c)

	3
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1(b) ii



(d) For this experiment state:
Bagi eksperimen ini nyatakan :

(i) The manipulated variable:
Pemboleh ubah di manipulasi

.....

(ii) The responding variable
Pemboleh ubah bergerak balas

.....

(iii) The constant variable
Pemboleh ubah dimalarkan

.....

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

.....

.....

(f) State the operational definition for rate of reaction.
Nyatakan definisi secara operasi bagi kadar tindak balas.

.....

(g) Big size of ice cube takes longer times to melt compare small size of ice cube at room temperature.

Explain why .

Ketulan air batu yang bersaiz besar mengambil masa yang lama untuk lebur berbanding dengan ketulan air batu yang bersaiz kecil yang kecil.

Terangkan mengapa.

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1(d)

	3
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1(e)

	3
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1 (f)

	3
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1 (g)

	3
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2. An experiment is carried out to investigate the acid- base properties of the oxides of elements in Period 3 using nitric acid and sodium hydroxide solution. Amphoteric oxide will show acidic properties and base properties.

Satu eksperimen telah dijalankan untuk mengkaji sifat-sifat asid –base ke atas oksida unsur-unsur dalam Kala 3 menggunakan asid nitrik dan larutan natrium hidroksida.

Observation of the experiments are shown in Table 2

Pemerhatian ke atas tindak balas tersebut ditunjukkan dalam Jadual 2

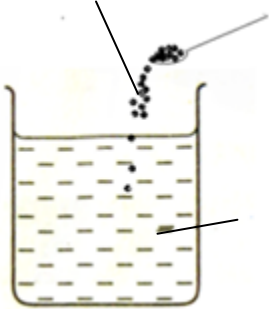
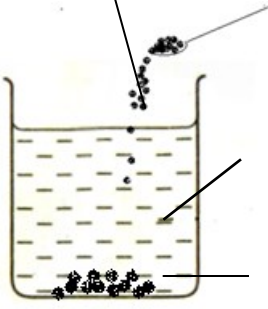
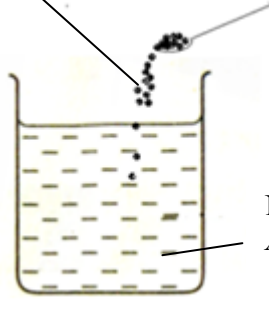
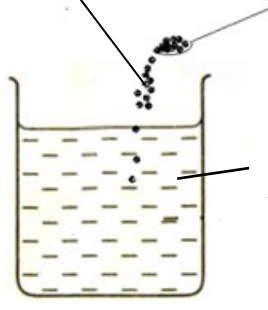
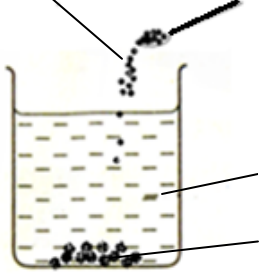
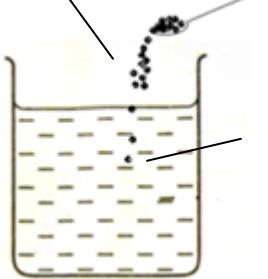
Experiment	Apparatus set-up <i>Susunan radas</i>	
I	<p>Sodium oxide <i>Natrium oksida</i></p>  <p>Nitric acid <i>Asid nitrik</i></p>	<p>Sodium oxide <i>Natrium oksida</i></p>  <p>Sodium hydroxide solution <i>Larutan natrium hidroksida</i></p> <p>Precipitate <i>mendakan</i></p>
II	<p>Aluminium oxide <i>Aluminium oksida</i></p>  <p>Nitric acid <i>Asid nitrik</i></p>	<p>Aluminium oxide <i>Aluminium oksida</i></p>  <p>Sodium hydroxide solution <i>Larutan natrium hidroksida</i></p>
III	<p>Silicon(IV) oxide <i>Silicon(IV) oksida</i></p>  <p>Nitric acid <i>Asid nitrik</i></p> <p>Precipitate</p>	<p>Silicon(IV) oxide <i>Silicon(IV) oksida</i></p>  <p>Sodium hydroxide solution <i>Larutan natrium hidroksida</i></p>

Table 2
Jadual 2

- a) Based on the experiments, complete the table below
Berdasarkan eksperimen, lengkapkan jadual di bawah;

Experiments <i>Eksperimen</i>	Observation <i>Pemerhatian</i>	Inferences <i>Inferen</i>
I		
II		
III		

2(a)

	6
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- (b). Classify the following oxides into soluble and insoluble oxides in water.
Kelaskan oksida-oksida berikut kepada oksida yang larut dan yang tidak larut dalam air.

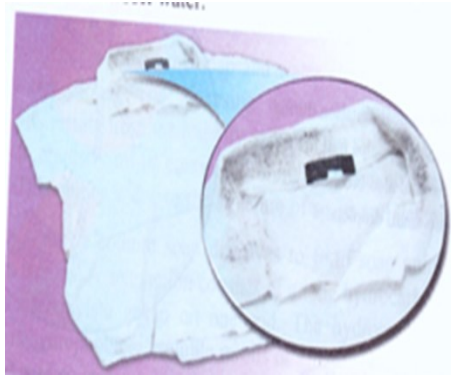
Copper(II) oxide
Potassium oxide
Sodium oxide

Soluble in water	Insoluble in water

2(b)

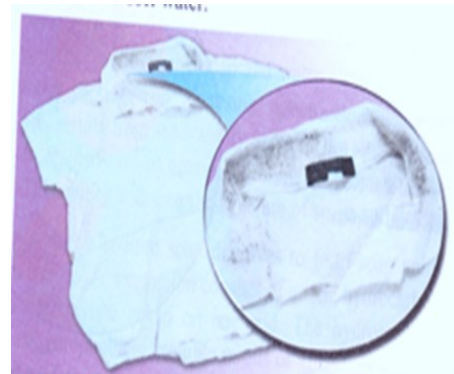
	3
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Dirty cloth is washed using cleansing agent X in hard water
Pakaian kotor dicuci dengan bahan pencuci X dalam air liat

cloth was cleaned
Pakaian menjadi bersih



Dirty cloth is washed using cleansing agent Y in hard water
Pakaian kotor dicuci dengan bahan pencuci Y dalam air liat

The cloth remain dirty/the scum formed
Pakaian kekal kotor/ pembentukan kekat

Diagram 3
Rajah 3

3. Based on observation in diagram 3, plan an experiment to investigate the effectiveness of cleansing agent X and cleansing agent Y in hard water .
Berdasarkan pemerhatian dalam rajah 3, rancang satu eksperimen untuk mengkaji keberkesanan agen pencuci X dan agen pencuci Y dalam air liat.

Your planning should include the following aspects.

Perancangan anda hendaklah mengandungi aspek-aspek berikut.:

- a) Aim of the experiment
Tujuan eksperimen
- b) All the variables
Semua pembolehubah
- c) Statement of the hypothesis
Pernyataan hipotesis
- d) Lists of substances and apparatus
Senarai bahan dan alat radas
- e) Procedure for the experiment
Prosedur eksperimen
- f) Tabulation of data
Penjadualan data

[17 marks]

[17 markah]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT

MAKLUMAT UNTUK CALON

1. *Jawab semua soalan.*
2. *Jawapan kepada Soalan 1 hendaklah ditulis dalam ruangan yang disediakan dalam kertas soalan.*
3. *Jawapan kepada Soalan 2 hendaklah ditulis pada helaian tambahan. Anda boleh menggunakan persamaan, gambar rajah, jadual, graf dan cara lain yang sesuai untuk menjelaskan jawapan anda.*
4. *Tunjukkan kerja mengira, ini membantu anda mendapatkan markah.*
5. *Sekiranya anda hendak membatalkan sesuatu jawapan, buat garisan di atas jawapan itu.*
6. *Rajah yang mengiringi tidak dilukiskan mengikut skala kecuali dinyatakan.*
7. *Markah yang diperuntukkan bagi setiap soalan atau ceraiian soalan ditunjukkan di dalam kurungan.*
8. *Masa yang dicadangkan menjawab Soalan 1 ialah 45 minit dan Soalan 2 ialah 45 minit.*
9. *Anda dibenarkan menggunakan kalkulator saintifik yang tidak boleh diprogram.*
10. *Kertas soalan ini hendaklah diserahkan di akhir peperiksaan.*

Pemberian markah:

Markah	Penerangan
3	Cemerlang : Respons yang paling baik
2	Memuaskan: Respons yang sederhana
1	Lemah: Respons yang kurang tepat
0	Tiada respons <u>atau</u> respons salah

INFORMATION FOR CANDIDATES

1. *Answer all questions.*
2. *Write your answer for Question 1 in the spaces provided in the question paper.*
3. *Write your answers for Question 3 on the extra sheet. You may use equations, diagrams, tables, graphs and other suitable methods to explain your answer.*
4. *Show your working, it may help you to get marks.*
5. *If you wish to cancel any answer, neatly cross out the answer.*
6. *The diagrams in the questions provided are not drawn to scale unless stated.*
7. *Marks allocated for each question or part question are shown in brackets.*
8. *The time suggested to answer Question 1 is 45 minutes and Question 2 is 45 minutes.*
9. *You may use a non-programmable scientific calculator.*
10. *This question paper must be handed in at the end of the examination.*

Marks awarded:

Mark	Description
3	Excellent: The best response provided
2	Satisfactory: An average response provided
1	Weak: An inaccurate response provided
0	No response <u>or</u> wrong response provided