

Answer **all** questions.
Jawab **semua** soalan.

- 1 An experiment is carried out to investigate the relationship between the concentration of hydroxide ion, OH^- with pH value of ammonia solution. Diagram 1 shows the pH value of ammonia solution which is measured using pH meter.

Satu eksperimen telah dijalankan untuk menyiasat hubungan antara kepekatan ion hidroksida, OH^- dengan nilai pH bagi larutan ammonia.

Rajah 1 menunjukkan nilai pH bagi larutan ammonia yang diukur dengan menggunakan meter pH.

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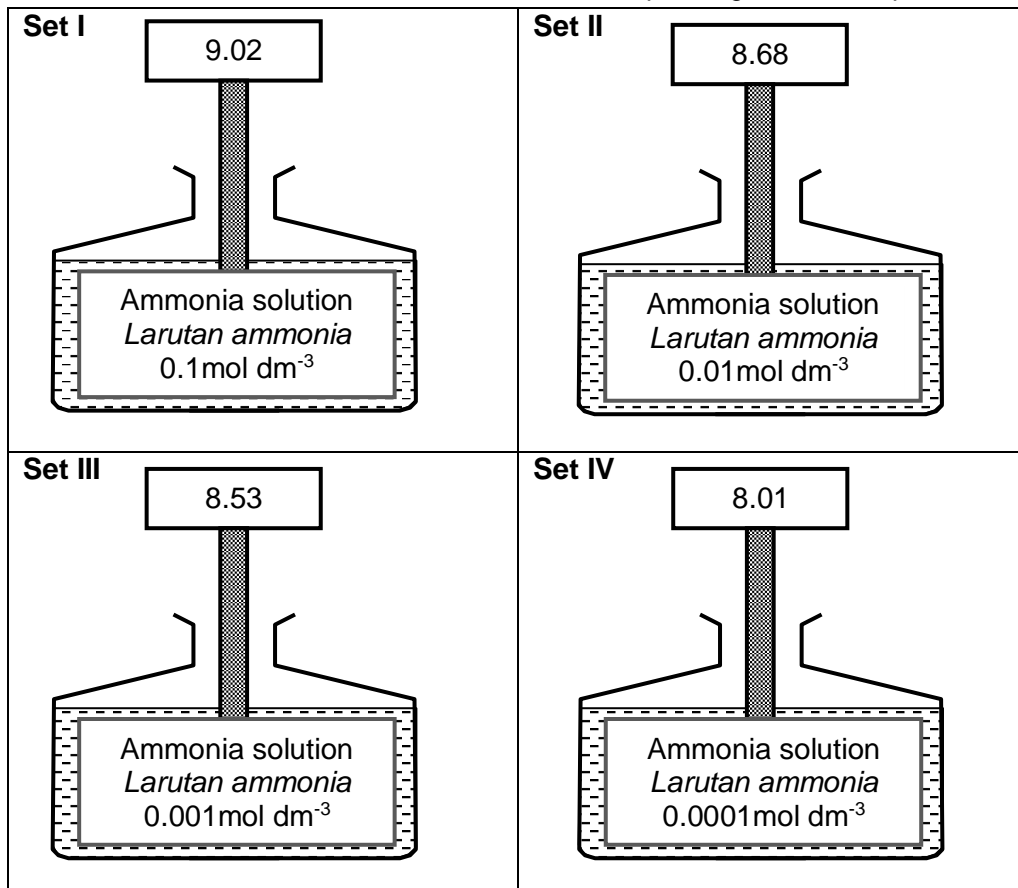


Diagram 1
Rajah 1

- (a) Record the pH value to **one** decimal place of :
*Rekod nilai pH kepada **satu** titik perpuluhan bagi:*

Set I :

Set II :

Set III :

Set IV :

[3 marks]

1(a)

3

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- (b) Construct a table to record the pH value for ammonia solution in Set I, Set II, Set III and Set IV.

Bina satu jadual untuk merekod nilai pH untuk larutan ammonia dalam Set I, Set II, Set III dan Set IV.

[3 marks]

1(b)

3

- (c) Calculate the number of moles of hydroxide ion in 50 cm³ of 0.01 mol dm⁻³ ammonia solution.

Hitungkan bilangan mol ion hidroksida dalam 50 cm³ larutan ammonia 0.01 mol dm⁻³.

[3 marks]

1(c)

3

- (d) State the relationship between the concentration of hydroxide ion, OH⁻ and the pH value.

Nyatakan hubungan antara kepekatan ion hidroksida, OH⁻ dan nilai pH.

.....

.....

.....

[3 marks]

1(d)

3

- (e) Predict the pH value if ammonia solution in Set I is replaced by sodium hydroxide solution with same concentration.

Ramal nilai pH jika larutan ammonia dalam Set I digantikan dengan larutan natrium hidroksida dengan kepekatan yang sama.

.....

[3 marks]

1(e)

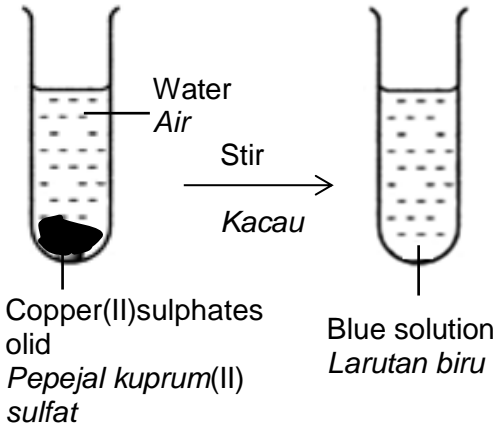
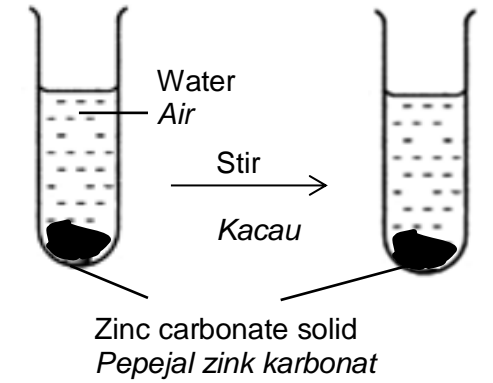
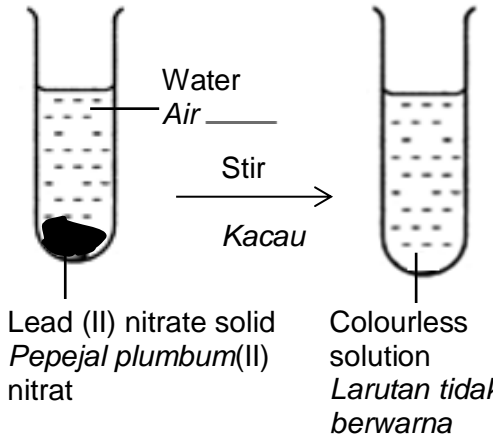
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Total 1

15

2 Table 2.1 shows set up of apparatus for Experiment I, Experiment II and Experiment III to study the solubility of salts in water.

Jadual 2.1 menunjukkan susunan radas bagi Eksperimen I, Eksperimen II dan Eksperimen III untuk mengkaji keterlarutan garam dalam air.

Experiment <i>Eksperimen</i>	Set up of apparatus <i>Susunan radas</i>	Observation <i>Pemerhatian</i>
I	 <p>Water Air</p> <p>Stir Kacau</p> <p>Copper(II)sulphates olid <i>Pepejal kuprum(II) sulfat</i></p> <p>Blue solution <i>Larutan biru</i></p>	<p>.....</p> <p>.....</p> <p>.....</p>
II	 <p>Water Air</p> <p>Stir Kacau</p> <p>Zinc carbonate solid <i>Pepejal zink karbonat</i></p>	<p>.....</p> <p>.....</p> <p>.....</p>
III	 <p>Water Air</p> <p>Stir Kacau</p> <p>Lead (II) nitrate solid <i>Pepejal plumbum(II) nitrat</i></p> <p>Colourless solution <i>Larutan tidak berwarna</i></p>	<p>.....</p> <p>.....</p> <p>.....</p>

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Table 2.1
Jadual 2.1

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(a) Write the observation for Experiment I, II and III in Table 2.1.
Tulis pemerhatian bagi Eksperimen I, II dan III dalam Jadual 2.1

[3 marks]

2(a)

3

(b) State **one** inference for the observation of Experiment I.
*Nyatakan **satu** inferens bagi pemerhatian bagi Eksperimen I.*

.....
.....

[3 marks]

2(b)

3

(c) For this experiment, state :
Bagi eksperimen ini, nyatakan:

(i) the manipulated variable.
pembolehubah yang dimanipulasikan.

.....

(ii) the responding variable.
pembolehubah yang bergerakbalas.

.....

(iii) the constant variable.
pembolehubah yang dimalarkan.

.....

[3 marks]

2(c)

3

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

.....
.....

[3 marks]

2(d)

3

(e) State the operational definition of soluble salt.
Nyatakan definisi secara operasi bagi garam terlarutkan.

.....
.....

[3 marks]

2(e)

3

- (f) Classify the following salts into soluble salts and insoluble salts.
Kelaskan garam-garam berikut kepada garam terlarutkan dan garam tak terlarutkan.

Ammonium carbonate, $(\text{NH}_4)_2\text{CO}_3$ <i>Ammonium karbonat, $(\text{NH}_4)_2\text{CO}_3$</i>	Calcium sulphate, CaSO_4 <i>Kalsiumsulfat, CaSO_4</i>
Silver chloride, AgCl <i>Argentum klorida, AgCl</i>	Magnesium nitrate, $\text{Mg}(\text{NO}_3)_2$ <i>Magnesium nitrat, $\text{Mg}(\text{NO}_3)_2$</i>

Soluble salts <i>Garam terlarutkan</i>	Insoluble salts <i>Garam tak terlarutkan</i>

[3 marks]

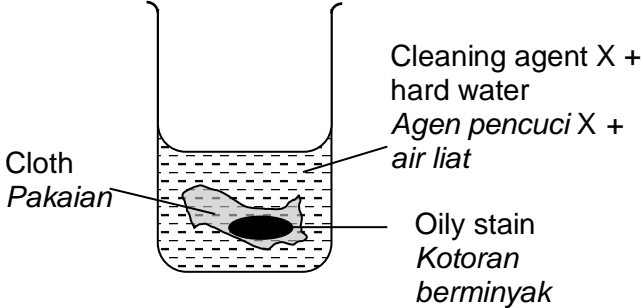
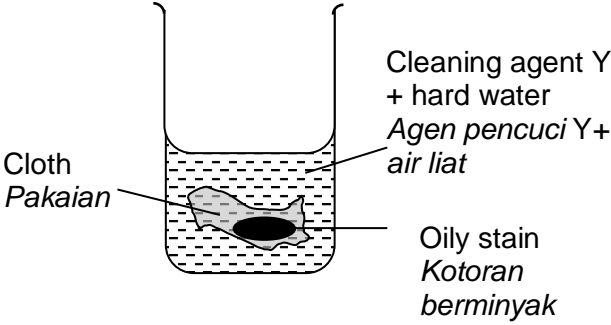
2(f)

3

Total 2

18

3. Diagram 3 shows the set-up of apparatus used to investigate the cleansing action of cleaning agent X and cleaning agent Y on a piece of cloth stained with oil.
Rajah 3 menunjukkan susunan radas yang digunakan untuk menyiasat tindakan pembersihan agen pencuci X dan agen pencuci Y pada pakaian yang dikotori minyak.

Experiment <i>Eksperimen</i>	Set up of apparatus <i>Susunan radas</i>	Observation <i>Pemerhatian</i>
I	 <p>Cleaning agent X + hard water <i>Agen pencuci X + air liat</i></p> <p>Oily stain <i>Kotoran berminyak</i></p> <p>Cloth <i>Pakaian</i></p>	Oily stains remained <i>Kotoran berminyak kekal</i>
II	 <p>Cleaning agent Y + hard water <i>Agen pencuci Y + air liat</i></p> <p>Oily stain <i>Kotoran berminyak</i></p> <p>Cloth <i>Pakaian</i></p>	Oily stains disappeared <i>Kotoran berminyak hilang</i>

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Diagram 3
Rajah 3

Based on Diagram 3, plan a laboratory experiment to compare the effectiveness of cleaning agent X and cleaning agent Y in hard water.
 You are required to give a name of cleaning agent X and cleaning agent Y.

*Berdasarkan Rajah 3, rancang satu eksperimen makmal untuk membandingkan keberkesanan agen pencuci X dan agen pencuci Y dalam air liat.
 Anda dikehendaki menamakan agen pencuci X dan agen pencuci Y.*

Your planning should include the following aspects:

Perancangan anda hendaklah mengandungi aspek-aspek berikut:

- (a) Problem statement
Pernyataan masalah
- (b) All the variables
Semua pembolehubah
- (c) Statement of the hypothesis
Pernyataan hipotesis
- (d) List of substances and apparatus
Senarai bahan dan radas
- (e) Procedure of the experiment
Prosedur eksperimen
- (f) Tabulation of data
Penjadualan data

[17 marks]

END OF QUESTION PAPER
KERTAS SOALAN TAMAT
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