|  |  |
| --- | --- |
| 1 | Diagram 1.1 shows the apparatus set-up for an experiment to investigate the effect of temperature  on the rate of diffusion. The experiment is repeated by using different temperatures.  *Rajah* 1.1 *menunjukkan susunan radas bagi satu eksperimen untuk mengkaji kesan suhu ke atas kadar resapan. Eksperimen diulang dengan menggunakan suhu yang berbeza.*    Zinc plate  *Plat zink*    Zinc plate  *Plat zink*      Diagram / Rajah 1.1  The experiment is carried out for 3 sets that is at **35 oC , 40 oC** and **45 oC**  *Eksperimen dijalankan untuk* 3 *set iaitu pada* **35 oC , 40 oC** *dan* **45 oC**  (a) For this experiment, state  *Bagi eksperimen ini, nyatakan*  (i) the manipulated variable : ...........................................................................................................  *pemboleh ubah dimanipulasikan*  (ii) the responding variable: .........…………………………………................................................  *pemboleh ubah bergerak balas*  (iii) the fixed variable:.......................................................................................................................  *pemboleh ubah dimalarkan*  [3 marks/ *markah* ]  (b) Record the readings of the stopwatch in the space provided in Diagram 1.2  *Rekod bacaan jam randik di dalam ruang yang disediakan dalam Rajah* 1.2  Set I: **35 oC**  *Set* I    Set II: **40 oC**  *Set* II        Set III: **45 oC**  *Set* III  Diagram / *Rajah* 1.2  [3 marks/ *markah* ] |
|  | (c) Construct a table to record the temperature and time taken for the brown gas to diffuse into  another gas jar when the glass plate is removed.  *Bina satu jadual untuk merekod suhu dan masa yang diambil bagi gas perang itu meresap ke*  *dalam balang gas yang satu lagi apabila kepingan kaca dialihkan.*  [3 marks/ *markah* ] |
|  | (d) State the relationship between temperature and the rate of diffusion.  *Nyatakan hubungan antara suhu dengan kadar resapan.*  ...............................................................................................................................................................  .............................................................................................................................................................  [3 marks/ *markah* ] |
|  | (e) The experiment in Set I is repeated by placing the gas jars in a container filled with ice.  Predict the rate of diffusion. Explain why.  *Eksperimen itu diulang di Set* I *dengan meletakkan balang gas dalam bekas yang*  *mengandungi ais*.  *Ramalkan kadar resapan. Terangkan mengapa.*  ……………………………………………………………………………………………………..  …………………………………………………………………………………………………….  [3 marks/ *markah* ] |
|  | (f) State the operational definition of rate of diffusion in this experiment.  *Nyatakan definisi operasi bagi kadar resapan eksperimen ini.*  ..............................................................................................................................................................  *.............................................................................................................................................................*  [3 marks/ *markah* ] |
|  | (g) Diagram 1.3 shows two examples of diffusion.  *Rajah* 1.3 *menunjukkan dua contoh resapan.*   |  |  | | --- | --- | | X: A tea bag immersed in water at room  temperature  X: *Satu uncang teh direndam dalam air*  *pada suhu bilik* | Y: Perfume is sprayed at room temperature  Y: *Minyak wangi disembur pada suhu bilik* | | Cup Tea Bag Isolated White Background Mug Hot Herbal Drinks ...  Tea bag  *Uncang teh* | Home  Perfume  *Minyak wangi* |   Diagram / *Rajah* 1.3  Which example has the higher rate of diffusion? Explain why.  *Contoh yang manakah mempunyoi kadar resapan yang lebih tinggi*? *Terangkan mengapa.*  ………………………………………………………………………………………………………….  ………………………………………………………………………………………………………….  [3 marks/ *markah* ] |

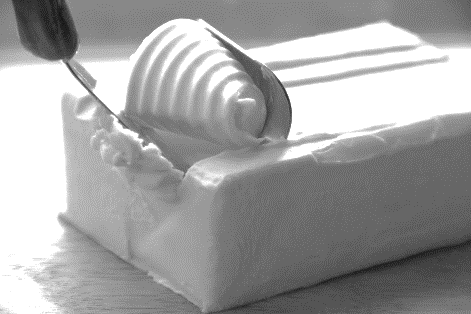
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| 2. | Diagram 2.1 shows the conversation between Dania and Dani.  *Rajah* 2.1 *menunjukkan perbualan antara Dania dan Dani*.  How do you know which salt is soluble in water and which salt is not?  *Bagaimana kamu tahu garam yang manakah larut dalam air dan garam yang tidak* ?  Muslim children in science gown on white Vector Image  Let us investigate the solubility of these salts in water.  *Mari kita kaji keterlarutan garam ini dalam air*    Diagram / Rajah 2.1    Table 2.1 shows Experiment I, II and III which are conducted by Dania and Dani to study the solubility of salts in water. They poured 2 cm3 of distilled water into a test-tube and then put in 1 spatula of zinc nitrate salt . They repeated the experiment with two other salts.  *Jadual* 2.1 *menunjukkan Eksperimen* I, II *dan* III *yang dijalankan oleh Dania dan Dani untuk mengkaji keterlarutan garam dalam air. Mereka menuangkan* 2 cm3 *air suling ke dalam tabung uji dan memasukkan* 1 *spatula garam zink nitrat. Mereka mengulang eksperimen itu dengan dua*  *garam yang lain.*   |  |  | | --- | --- | | **Experiment**  ***Eksperimen*** | **Reaction**  ***Tindak balas*** | | I | \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_    water  *air*  Copper(II) nitrate  *Kuprum*(II) *nitrat* | | II | \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  water  *air*  Copper(II)carbonate  *Kuprum*(II)*karbonat* | | III | \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  \_ \_ \_ \_  water  *air*  Lead(II)sulphate  *Plumbum* (II) *sulfat* |   Diagram / Rajah 2.1  (a) State observation and the corresponding inferences for Experiment I, II and III.  *Nyatakan pemerhatian dan inferens yang sepadan bagi Eksperimen* I, II *dan* III.   |  |  | | --- | --- | | **Observation**  ***Pemerhatian*** | **Inferences**  ***Inferen*** | | I |  | | II |  | | III |  |   [6 marks/ *markah* ]  (b) State one hypothesis for this experiment.  *Nyatakan satu hipotesis bagi experiment ini.*  ...............................................................................................................................................................  ..........................................................................................................................................................  [3 marks/ *markah* ] |
|  | (c) Salts are ionic compounds with high melting and boiling points.  Classify the substances in the box below into ionic compound and not ionic compound.  *Garam adalah sebatian ion yang mempunyai takat lebur dan takat didh yang tinggi.*  *Kelaskan bahan-bahan di dalam kotak di bawah kepada sebatian ion dan bukan sebatian ion.*   |  | | --- | | Copper Iron(II) chloride Sodium oxide Nitrogen gas  *Kuprum Ferum*(II) *klorida Natrium oksida* *Gas nitrogen* |  |  |  | | --- | --- | | **Ionic compound**  ***Sebatian ion*** | **Not ionic compound**  ***Bukan sebatian ion*** | |  |  |   [3 marks/ *markah* ] |

3. Diagram 3.1 shows butter and peanut oil.

Butter is a saturated compound while peanut oil is an unsaturated compound.

*Rajah* 3.1 *menunjukkan mentega dan minyak kacang.*

*Mentega adalah sebatian tepu manakala minyak kacang adalah sebatian tak tepu*

**

Peanut oil  *Minyak kacang*

Butter

*Mentega*

Peanut oil

*Minyak kacang*

Butter

*Mentega*

Diagram/ *Rajah* 3.1

The chemical properties of an unsaturated compound and saturated compound can be shown by the hydrocarbons, alkane and the alkene.

By using the hydrocarbons with the number of carbons **5** or **6**, plan a laboratory experiment to differentiate both hydrocarbons. Use the information below in your planning.

*Sifat kimia sebatian tepu dan sebatian tak tepu boleh ditunjukkan oleh hidrokarbon, alkana dan alkena. Dengan menggunakan hidrokarbon bernombor karbon* **5** *atau* **6***, rancangkan satu eksperimen makmal untuk membezakan kedua-dua hidrokarbon ini. Guna maklumat yang di berikan untuk perancangan anda.*

|  |  |
| --- | --- |
| **Hydrocarbon**  ***Hidrokarbon*** | **General formula**  ***Formula am*** |
| Alkane  *Alkana* | **CnH2n+2** |
| Alkene  *Alkena* | **CnH2n** |
| Use **bromine water** or **acidified potassium manganate(VII) solution** as reagents  *Guna* ***air bromin*** *atau* ***larutan kalium manganat*(VII) *berasid*** *sebagai reagen* | |

Your planning should include the following aspects:

*Perancangan anda hendaklah mengandungi aspek-aspek berikut* :

(a) Problem statement

*Pernyataan masalah*

(b) All the variables

*Semua pemboleh ubah*

(c) Statement of the hypothesis

*Pernyataan hipotesis*

(d) List of substances and apparatus

*Senarai bahan dan radas*

(e) Procedure for the experiment

*Prosedur eksperimen*

(f) Tabulation of data

*Penjadualan data*

[17 marks/ *markah*]