

2015 SPM CHEMISTRY - EXTRA EXERCISES

Question 1

Diagram 2 shows a flow chart of a series of changes that occur between the members of some homologous series.

Rajah 2 menunjukkan carta alir bagi suatu perubahan yang berlaku antara ahli-ahli siri homolog.

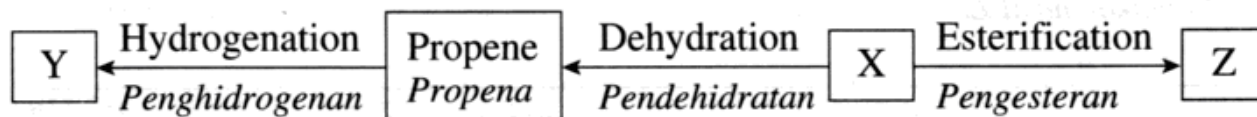


Diagram 2/Rajah 2

(a) Write the molecular formula of propene.

Tuliskan formula molekul bagi propena.

[1 mark/1 markah]

(b) (i) Write the general formula of the homologous series of compound Y.

Tuliskan formula am bagi siri homolog bagi bahan Y.

[1 mark/1 markah]

(ii) Write a chemical equation to show the change of propene to compound Y through hydrogenation.

Tuliskan persamaan kimia apabila propena bertukar kepada sebatian Y menerusi proses penghidrogenan.

[1 mark/1 markah]

(iii) What are the conditions for the reaction stated in (b)(ii)?

Nyatakan keadaan yang diperlukan bagi tindak balas di (b)(ii)?

[2 marks/2 markah]

- (c) (i) Write the chemical formula of compound X.
Tuliskan formula kimia bagi sebatian X.

[1 mark/1 markah]

- (ii) Draw the structural formula of **one** of the isomers of compound X. Name the isomer.
*Lukis formula struktur bagi salah **satu** isomer sebatian X. Namakan isomer tersebut.*

[2 marks/2 markah]

- (d) X will change to Z when it reacts with ethanoic acid through esterification.
X akan bertukar kepada Z apabila bertindak balas dengan asid etanoik melalui tindak balas pengesteran.

Name product Z.
Namakan hasil Z.

[1 mark/1 markah]

QUESTION 2

- (a) Diagram 6 shows two pieces of greasy cloth soaked in two types of water.
Rajah 6 menunjukkan dua helai kain bergris yang direndam dalam dua jenis air.

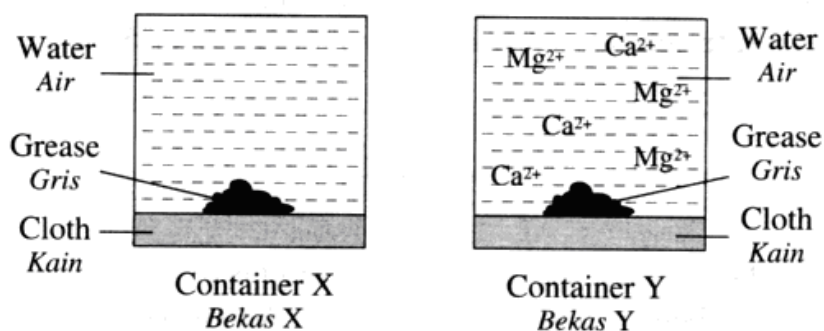


Diagram 6/Rajah 6

- (i) State the type of water that has a high concentration of Ca^{2+} and Mg^{2+} ions.
Nyatakan jenis air yang mempunyai kepekatan ion Ca^{2+} dan Mg^{2+} yang tinggi.

[1 mark/1 markah]

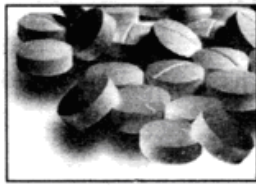
- (ii) In which container can soap remove the grease easily?
Dalam bekas manakah sabun dapat menghilangkan kotoran bergris dengan lebih mudah?

[1 mark/1 markah]

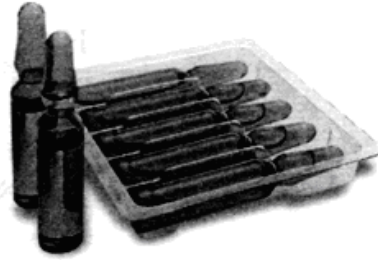
- (iii) Give **one** reason for your answer in (c)(ii).
*Berikan **satu** sebab bagi jawapan anda dalam (c)(ii).*

[1 mark/1 markah]

- (b) Diagram 6.2 shows three types of modern medicine.
Rajah 6.2 menunjukkan tiga jenis ubat moden.



Paracetamol
Parasetamol



Streptomycin
Streptomisin



Amphetamine
Amfetamin

Diagram 6.2/Rajah 6.2

Antibiotics can slow down the growth of bacteria.
Antibiotik boleh memperlambatkan pertumbuhan bakteria.

- (i) Which medicine is an antibiotic?
Ubat yang manakah sejenis antibiotik?

[1 mark/1 markah]

- (ii) What is the function of an antibiotic?
Apakah fungsi antibiotik?

[1 mark/1 markah]

- (iii) Doctors advise patients to finish all the antibiotics given. After two days of taking an antibiotic, the patient feels healthy and stops taking the antibiotic. What is the effect of this action on the patient?
Doktor menasihatkan pesakit untuk menghabiskan semua antibiotik yang diberikan. Selepas dua hari mengambil antibiotik, pesakit tersebut berasa sihat dan berhenti mengambil antibiotik itu. Apakah kesan tindakan ini terhadap pesakit?

[1 mark/1 markah]

- (iv) Which medicine is used for treating depression?
Ubat manakah digunakan untuk merawat kemurungan?

[1 mark/1 markah]

- (v) What is the side effect of excessive use of the medicine in (b)(iv)?
Apakah kesan sampingan penggunaan ubat dalam (b)(iv) secara berlebihan?

[1 mark/1 markah]

- (c) Diagram 6.3 shows the structural formula of aspirin.
Rajah 6.3 menunjukkan formula struktur bagi aspirin.

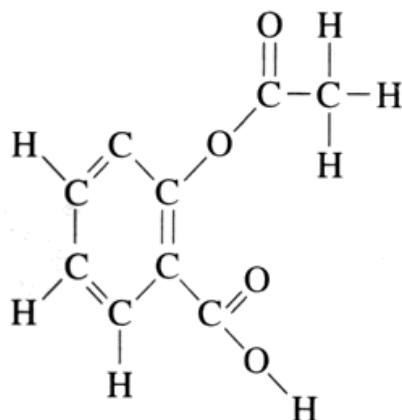


Diagram 6.3/Rajah 6.3

- (i) Write the molecular formula and empirical formula of aspirin.
Tuliskan formula molekul dan formula empirik bagi aspirin.

Molecular formula:

Formula molekul:

[1 mark/1 markah]

- (ii) Calculate the percentage of carbon by mass in an aspirin molecule.
Hitung peratus karbon mengikut jisim dalam molekul aspirin.

[Relative atomic mass: C, 12; H, 1; O, 16]

[Jisim atom relatif: C, 12; H, 1; O, 16]

[2 marks/2 markah]

Question 3

Diagram 3 shows three chemical reactions of lead(II) nitrate.

Rajah 3 menunjukkan tiga tindak balas kimia bagi plumbum(II) nitrat.

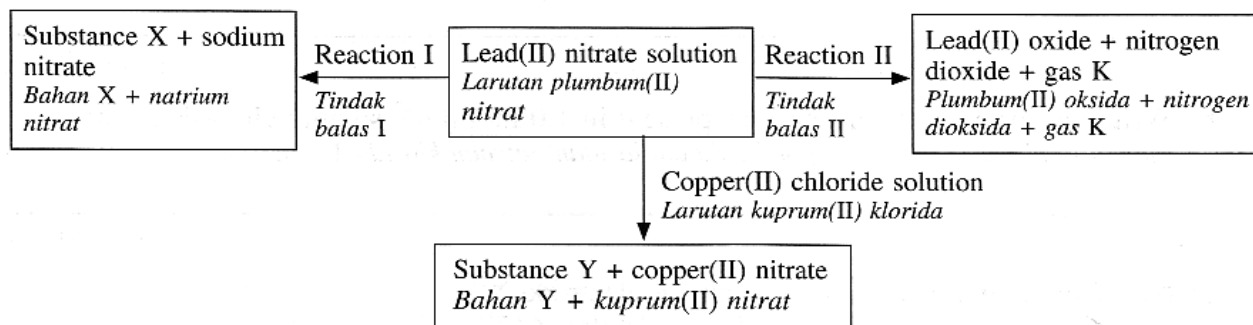


Diagram 3/Rajah 3

- (a) Suggest **one** substance that can be used to prepare lead(II) nitrate from nitric acid.
Cadangkan **satu** bahan yang boleh digunakan bagi menyediakan plumbum(II) nitrat daripada asid nitrik.

[1 mark/1 markah]

- (b) Excess of sodium hydroxide solution is added to lead(II) nitrate solution in Reaction I.
Larutan natrium hidroksida berlebihan ditambah kepada larutan plumbum(II) nitrat dalam Tindak balas I.

- (i) What can be observed in Reaction I?
Apakah yang dapat diperhatikan dalam Tindak balas I?

[1 mark/1 markah]

- (ii) Name substance X.
Namakan bahan X.

[1 mark/1 markah]

- (c) (i) State how Reaction II is conducted.
Nyatakan bagaimana Tindak balas II dijalankan.

[1 mark/1 markah]

- (ii) How do you identify gas K in Reaction II?
Bagaimana kamu mengenalpasti gas K dalam Tindak balas II?

[1 mark/1 markah]

- (iii) Write an equation for Reaction II.
Tulis persamaan bagi Tindak balas II.

[1 mark/1 markah]

- (d) When lead(II) nitrate solution is added to copper(II) chloride solution in a test tube, substance Y and copper(II) nitrate are produced.

Apabila larutan plumbum(II) nitrat ditambahkan ke dalam larutan kuprum(II) klorida di dalam tabung uji, bahan Y dan kuprum(II) nitrat dihasilkan.

- (i) Name the ions that are moving freely in the products.
Namakan ion-ion yang bebas bergerak dalam hasil tindak balas.

[1 mark/1 markah]

- (ii) Name substance Y.
Namakan bahan Y.

[1 mark/1 markah]

- (iii) Write an ionic equation to show the formation of substance Y.
Tulis persamaan ion bagi menunjukkan pembentukan bahan Y.

[1 mark/1 markah]

- (iv) How can you separate substance Y from copper(II) nitrate?
Bagaimana kamu dapat mengasingkan bahan Y daripada kuprum(II) nitrat?

[1 mark/1 markah]

QUESTION 4

Assignment

Natural rubber which is obtained straight from the rubber tree must undergo vulcanization to improve its quality.

You are required to plan an experiment which is connected with the above statement and state how the shortage of natural rubber can be overcome.

Tugasan

Getah asli yang dihasilkan terus daripada pokok getah mestilah menjalani proses pemvulkanan untuk memperbaiki mutu getah.

Anda dikehendaki merancang satu eksperimen yang berkaitan dengan pernyataan di atas dan nyatakan bagaimana kekurangan getah asli ini dapat diatasi.

Your explanation must have the following items:

Penerangan anda harus mempunyai perkara-perkara yang berikut:

- (a) The aim of the experiment
Tujuan eksperimen
- (b) All the variables
Semua pemboleh ubah
- (c) Statement of the hypothesis
Pernyataan hipotesis
- (d) List of the substances and apparatus
Senarai bahan dan radas
- (e) Procedure for the experiment
Prosedur eksperimen
- (f) Tabulation of the data
Penjadualan data

[17 marks/17 markah]