

Practise Now 15

Complete the table below regarding the production of ester.
 Lengkapkan jadual di bawah mengenai penghasilan ester.

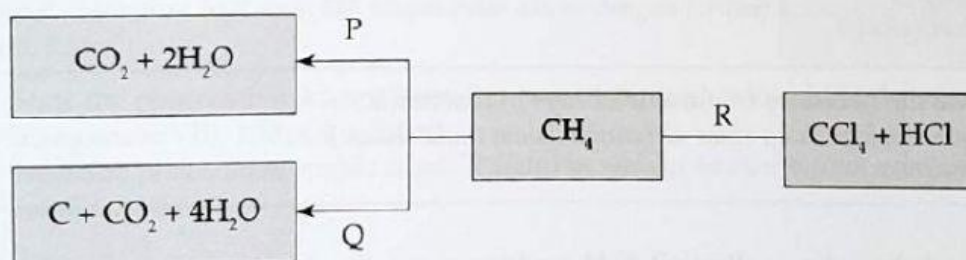
Similar Questions

Exercise 2.3:
 [Question 5(f)]

Reactants <i>Bahan tindak balas</i>		Name of ester <i>Nama ester</i>	Molecular formula <i>Formula molekul</i>
Methanol <i>Metanol</i>	Methanoic acid <i>Asid metanoik</i>		
Ethanol <i>Etanol</i>	Ethanoic acid <i>Asid etanoik</i>		
Propanol <i>Propanol</i>	Propanoic acid <i>Asid propanoik</i>		

Exercise 2.3

- 1 Study the following diagram regarding the chemical properties of methane, CH_4 .
 Kaji rajah mengenai sifat kimia metana, CH_4 yang berikut.



- (a) Identify the type of reaction represented by P, Q, and R.

Kenal pasti jenis tindak balas yang diwakili oleh P, Q dan R.

P: _____

Q: _____

R: _____

- (b) Write the balanced chemical equations for the reaction that occurs in P and Q.

Tuliskan persamaan kimia yang seimbang bagi tindak balas yang berlaku di P dan Q.

P: _____

Q: _____

- (c) Describe the reaction that occurs in Q.
Huraikan tindak balas yang berlaku di Q.

- (d) What are the products formed during reaction P if methane is replaced by propane?
Apakah hasil tindak balas yang terbentuk semasa tindak balas P jika metana digantikan dengan propana?

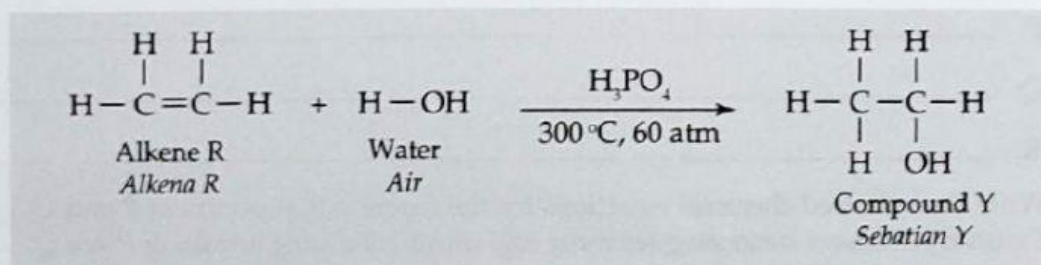
- (e) Reaction R occurs in four stages. Write the chemical equation that occurs in every stage.
Tindak balas R berlaku dalam empat peringkat. Tuliskan persamaan kimia yang berlaku dalam setiap peringkat tersebut.

Stage 1 Peringkat 1	(i)
Stage 2 Peringkat 2	(ii)
Stage 3 Peringkat 3	(iii)
Stage 4 Peringkat 4	(iv)

- (f) State the necessity of ultraviolet rays in reaction R.
Nyatakan keperluan sinar ultraungu dalam tindak balas R.

- 2 Diagram below shows alkene R, C_2H_4 undergoes reaction I to form compound Y. Compound Y undergoes reaction II to form alkene R.

Rajah di bawah menunjukkan alkena R, C_2H_4 menjalani tindak balas I untuk membentuk sebatian Y. Sebatian Y menjalani tindak balas II untuk membentuk alkena R.



- (a) State the name for alkene R.
Nyatakan nama bagi alkena R.

- (b) State the name and molecular formula of compound Y.
Nyatakan nama dan formula molekul bagi sebatian Y.

- (c) Based on diagram, describe reaction I.
Berdasarkan rajah, huraikan mengenai tindak balas I.

- (d) Write a balanced chemical equation for the conversion of alkene R to compound Y in reaction I.

Tuliskan persamaan kimia seimbang bagi penukaran alkena R kepada sebatian Y dalam tindak balas I.

- (e) Alkene R is used to study the reaction of alkene with acidified potassium manganate(VII), KMnO_4 solution.

Alkena R digunakan bagi mengkaji tindak balas alkena dengan larutan kalium manganat(VII) berasid, KMnO_4 .

- (i) State the observation when alkene R is passed through into acidified potassium manganate(VII), KMnO_4 solution.
Nyatakan pemerhatian apabila alkena R dialirkan melalui larutan kalium manganat(VII) berasid, KMnO_4 .

- (ii) Write the balanced chemical equation for the reaction in 2(e)(i).
Tuliskan persamaan kimia yang seimbang bagi tindak balas dalam 2(e)(i).

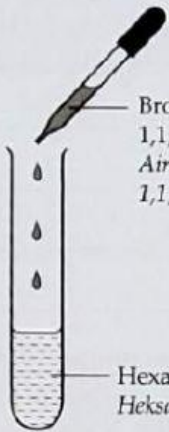
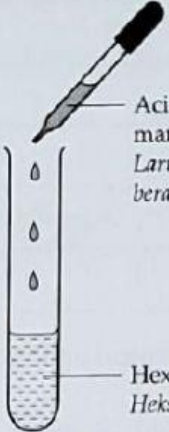
- (f) Describe another two chemical properties of alkene R.
Huraikan dua sifat kimia lain bagi alkena R.

(i) _____

(ii) _____

- 3 Haziq carried out an experiment to compare alkanes and alkenes. Diagram below shows two set-ups of apparatus of the experiment.

Haziq telah menjalankan suatu eksperimen untuk membandingkan alkana dengan alkena. Rajah di bawah menunjukkan dua susunan radas bagi eksperimen tersebut.

Experiment A Eksperimen A	Experiment B Eksperimen B
 Bromine water, Br₂ in 1,1,1-trichloroethane, CH₃CCl₃ Air bromin, Br₂ dalam 1,1,1-trikloroetana, CH₃CCl₃ Hexane/Hexene Heksana/Heksena	 Acidified potassium manganate(VII) solution, KMnO₄ Larutan kalium manganat(VII), berasid KMnO₄ Hexane/Hexene Heksana/Heksena

- (a) State the observations in experiments A and B.

Nyatakan pemerhatian bagi eksperimen A dan eksperimen B.

Experiment Eksperimen	Observation Pemerhatian
A	(i) Hexane, C ₆ H ₁₄ Heksana, C ₆ H ₁₄
	(ii) Heksene, C ₆ H ₁₂ Heksena, C ₆ H ₁₂
B	(iii) Hexane, C ₆ H ₁₄ Heksana, C ₆ H ₁₄
	(iv) Heksene, C ₆ H ₁₂ Heksena, C ₆ H ₁₂

- (b) Based on your observation in 3(a), which compound is more reactive? Explain your answer.

Berdasarkan pemerhatian anda di 3(a), sebatian yang manakah lebih reaktif? Terangkan jawapan anda.

- (c) State the difference in observation when hexane, C_6H_{14} and hexene, C_6H_{12} are burnt in excess oxygen.

Nyatakan perbezaan pemerhatian apabila kedua-dua heksana, C_6H_{14} dan heksene, C_6H_{12} dibakar dalam oksigen berlebihan.

- (d) Explain your answer in 3(c).

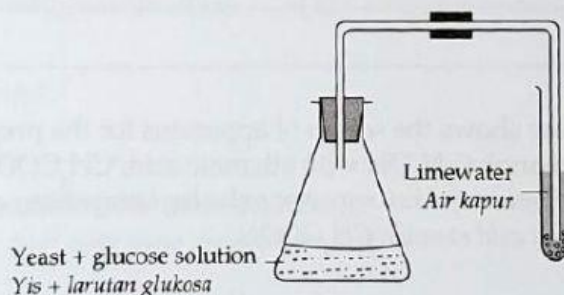
Terangkan jawapan anda di 3(c).

- (e) State one similarity between hexene and hexane.

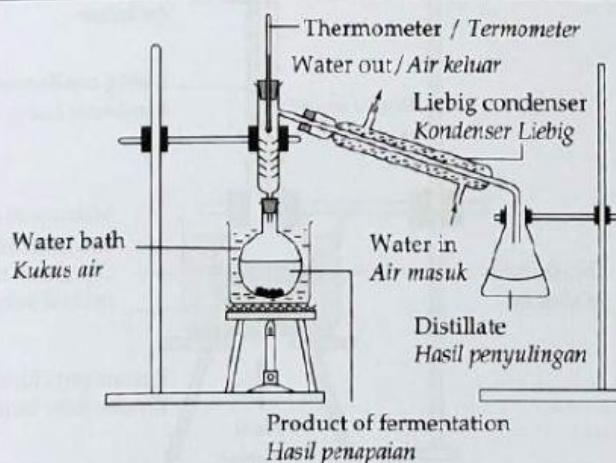
Nyatakan satu persamaan antara heksena dengan heksana.

- 4 Ethanol, C_2H_5OH can be prepared in the laboratory through fermentation followed by distillation. Diagram below shows the set-up of apparatus for the preparation of ethanol.
Etanol, C_2H_5OH boleh disediakan dalam makmal melalui penapaian yang diikuti dengan penyulingan. Rajah di bawah menunjukkan susunan radas bagi penyediaan etanol.

Fermentation of glucose
Penapaian glukosa

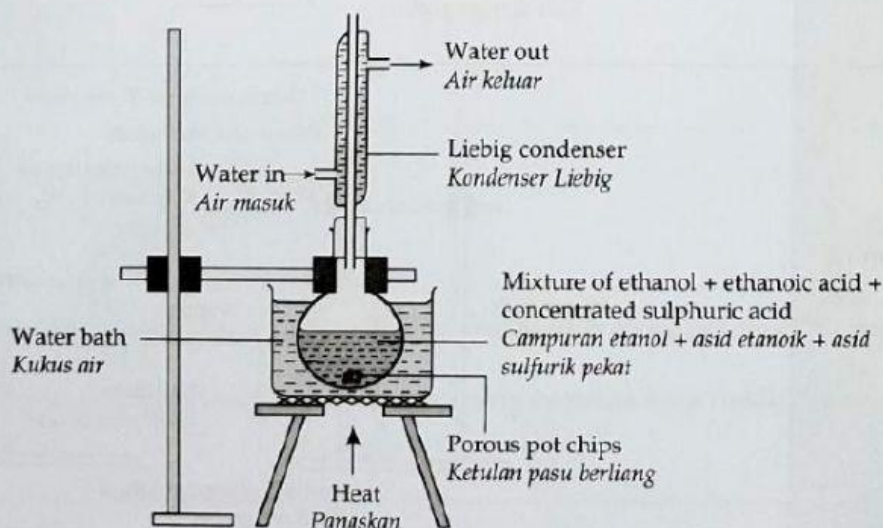


Distillation of alcohol
Penyulingan alkohol



- (a) What is the function of yeast in the fermentation of glucose?
Apakah fungsi yis dalam penapaian glukosa?
-
- (b) What happens to the limewater during fermentation of glucose?
Apakah yang berlaku pada air kapur semasa penapaian glukosa?
-
- (c) Give inference based on your observation in 4(b).
Berikan inferens berdasarkan pemerhatian anda di 4(b).
-
- (d) Write the chemical equation for the fermentation of glucose, $C_6H_{12}O_6$.
Tulis persamaan kimia untuk penapaian glukosa, $C_6H_{12}O_6$.
-
- (e) Name the product collected in fractional distillation at $78^\circ C$.
Namakan hasil yang dikumpulkan dalam penyulingan berperingkat pada suhu $78^\circ C$.
-
- (f) Describe another method that can be used to prepare ethanol.
Huraikan kaedah lain yang boleh digunakan untuk menyediakan etanol.
-
-
-
-

- 5 Diagram below shows the set-up of apparatus for the preparation of ethyl ethanoate from the reaction of ethanol, C_2H_5OH with ethanoic acid, CH_3COOH .
Rajah di bawah menunjukkan susunan radas bagi penyediaan etil etanoat daripada tindak balas etanol, C_2H_5OH dengan asid etanoik, CH_3COOH .



- (a) Name the reaction that took place between ethanol, C_2H_5OH and ethanoic acid, CH_3COOH .
Namakan tindak balas yang berlaku antara etanol, C_2H_5OH dengan asid etanoik, CH_3COOH .

- (b) Write the chemical equation for the reaction named in 5(a).
Tuliskan persamaan kimia bagi tindak balas yang dinamakan di 5(a).

- (c) Write the molecular formula of ethyl ethanoate.
Tuliskan formula molekul bagi etil etanoat.

- (d) The mixture is heated using a water bath. Explain why.
Campuran tersebut dipanaskan menggunakan kukus air. Terangkan mengapa.

- (e) What is the function of concentrated sulphuric acid, H_2SO_4 ?
Apakah fungsi asid sulfurik pekat, H_2SO_4 ?

- (f) The experiment is repeated by replacing ethanol, C_2H_5OH with propanol, C_3H_7OH .
Eksperimen itu diulang dengan menggantikan etanol, C_2H_5OH dengan propanol, C_3H_7OH .

- (i) Name the ester formed.
Namakan ester yang terbentuk.

- (ii) Draw the structural formula of ester named in 5(f)(i).
Lukiskan formula struktur bagi ester yang dinamakan di 5(f)(i).