

- (iii) State two physical properties of ester.
Nyatakan dua sifat fizik ester.

2.4

Isomers and Naming Based on IUPAC Nomenclature

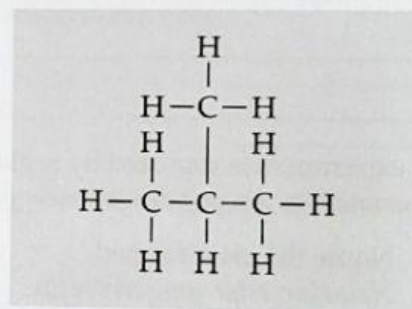
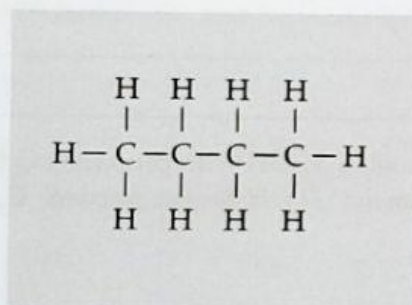
Isomer dan Penamaan mengikut IUPAC

- 2.4.1 Describe structural isomerism
Memerihalkan keisomeran struktur
- 2.4.2 Construct structure of isomers
Membina struktur isomer
- 2.4.3 Explain with examples the uses of each homologous series in daily life
Menjelaskan dengan contoh kegunaan setiap siri homolog dalam kehidupan harian

2.4.1 Structural isomerism *Keisomeran struktur*

Example 16

Diagram below shows two examples of structural isomerism in butane, C_4H_{10} .
Rajah di bawah menunjukkan dua contoh keisomeran struktur pada butana, C_4H_{10} .



- (a) State the meaning of structural isomerism.
Nyatakan maksud keisomeran struktur.
- (b) Compare the chemical properties between two isomers shown above.
Bandingkan sifat kimia antara dua isomer yang ditunjukkan di atas.
- (c) Explain your answer in (b).
Terangkan jawapan anda di (b).

Answer/ Jawapan

- (a) Structural isomerism is a phenomenon where a compound has the same molecular formula but with two or more different structural formulae.
Keisomeran struktur ialah fenomena suatu sebatian yang mempunyai formula molekul sama tetapi mempunyai dua atau lebih formula struktur yang berbeza.
- (b) Both isomers have the same chemical properties.
Kedua-dua isomer mempunyai sifat kimia yang sama.
- (c) Both have the same functional group.
Kedua-duanya mempunyai kumpulan berfungsi yang sama.

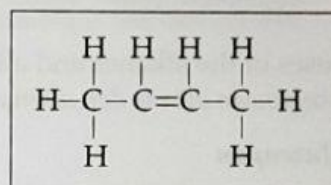
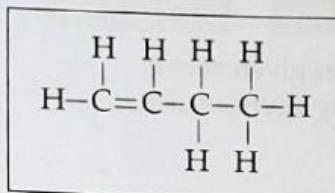
Practise Now 16

Similar Questions

Exercise 2.4:
[Question 5]

Isomers of alkanes are formed by chain isomers only.
Isomer bagi alkana terbentuk secara isomer rantai sahaja.

- (a) What is meant by chain isomerism?
Apakah yang dimaksudkan oleh keisomeran rantai?
- (b) Name another type of structural isomerism.
Namakan jenis keisomeran struktur yang lain.
- (c) State the type of structural isomerism shown below.
Nyatakan jenis keisomeran struktur yang ditunjukkan di bawah.


2.4.2 Structure of isomers
Struktur isomer
Example 17

Draw the isomers of pentane, C_5H_{12} and name them according to the IUPAC nomenclature.
Lukiskan kesemua isomer pentana, C_5H_{12} dan namakannya mengikut sistem penamaan IUPAC.

Answer/ Jawapan

	Isomers/ Isomer	Name/ Nama
1	$ \begin{array}{ccccccc} & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \\ & & & & & & \\ \text{H} & - \text{C} - & \text{C} - & \text{C} - & \text{C} - & \text{C} - & \text{H} \\ & & & & & & \\ & \text{H} & \text{H} & \text{H} & \text{H} & \text{H} & \end{array} $	Pentane Pentana
2	$ \begin{array}{ccccccc} & \text{H} & \text{CH}_3 & \text{H} & \text{H} & & \\ & & & & & & \\ \text{H} & - \text{C} - & \text{C} - & \text{C} - & \text{C} - & \text{H} & \\ & & & & & & \\ & \text{H} & \text{H} & \text{H} & \text{H} & & \end{array} $	2-methylbutane 2-metilbutana
3	$ \begin{array}{ccccccc} & \text{H} & \text{CH}_3 & \text{H} & & & \\ & & & & & & \\ \text{H} & - \text{C} - & \text{C} - & \text{C} - & \text{H} & & \\ & & & & & & \\ & \text{H} & \text{CH}_3 & \text{H} & & & \end{array} $	2,2-dimethylpropane 2,2-dimetilpropana

Practise Now 17

Similar Questions

Exercise 2.4:
[Question 1]

Draw the isomers of pentene, C_5H_{10} and name them according to the IUPAC nomenclature system.
Lukiskan kesemua isomer pentena, C_5H_{10} dan namakannya mengikut sistem penamaan IUPAC.

2.4.3 Uses of each homologous series in daily life
Kegunaan setiap siri homolog dalam kehidupan harian

Example 18

The following information shows several alkanes and alkenes.
Maklumat berikut menunjukkan beberapa alkana dan alkena.

Ethane
Etana

Butane
Butana

Ethene
Etena

But-1,3-diene
But-1,3-diena

State the uses of the alkanes and alkenes given above.
Nyatakan kegunaan alkana dan alkena yang diberikan di atas.

Answer/ Jawapan

- Liquefied natural gas LNG that contains ethane is used as fuel for power stations
Gas asli cecair LNG yang mengandungi etana digunakan sebagai bahan api untuk stesen janakuasa
- Butane is used as fuel for lighters and portable stoves
Butana digunakan sebagai bahan api untuk pemetik api dan dapur mudah alih
- Ethene is used to produce polythene, polyvinyl chloride (PVC) and polystyrene
Etena digunakan untuk menghasilkan politena, polivinilklorida(PVC) dan polisterina
- But-1,3-diene is used to make synthetic rubber for manufacturing tyres and hot water bags
But-1,3-diena digunakan untuk membuat getah sintetik bagi menghasilkan tayar dan beg tungku air panas

Practise Now 18

Explain the uses of alcohol in the following fields:
Terangkan kegunaan alkohol dalam bidang-bidang berikut:

Similar Questions

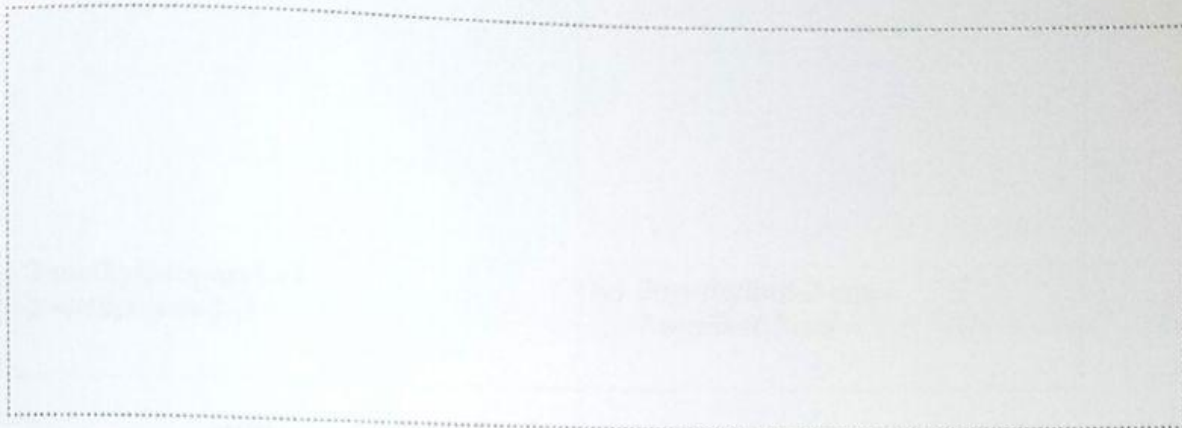
Exercise 2.4:
[Question 4]

Fields <i>Bidang</i>	Uses <i>Kegunaan</i>
Fuel <i>Bahan api</i>	(a)
Manufacturing sector <i>Sektor pembuatan</i>	(b)
Solvent <i>Pelarut</i>	(c)
Pharmaceutical product <i>Produk farmaseutikal</i>	(d)

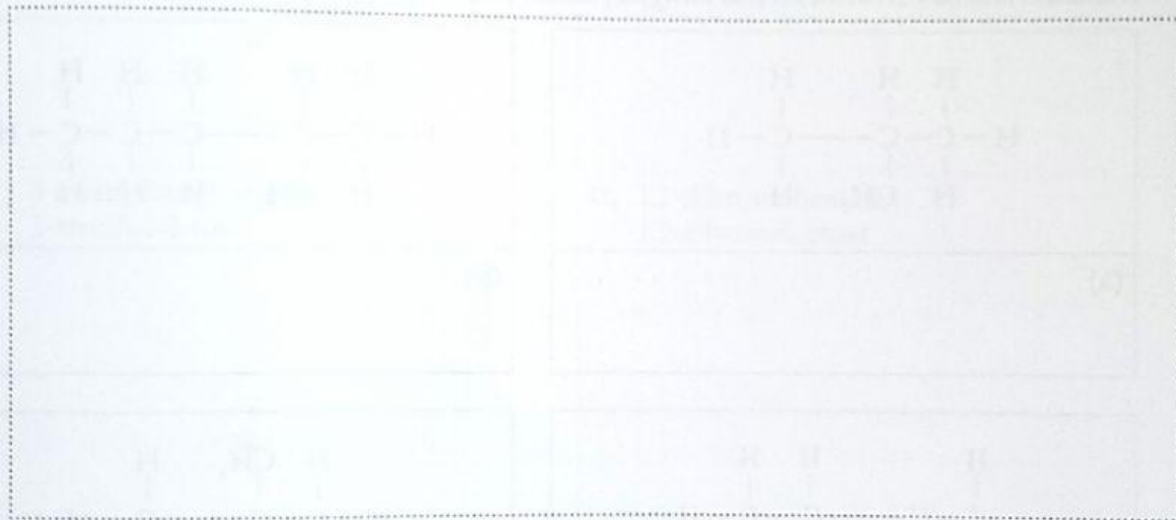
Exercise 2.4

- 1 Draw and name all possible isomers of the following compounds:
Lukiskan dan namakan semua isomer yang mungkin bagi sebatian-sebatian berikut:

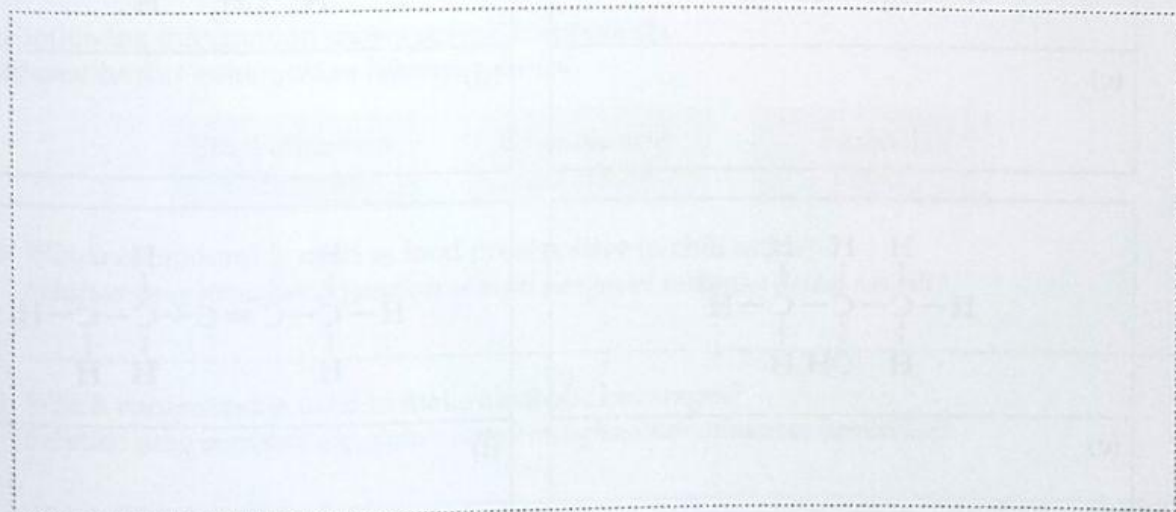
(a) Butane / Butana, C_4H_{10}



(b) Butene / Butena, C_4H_8

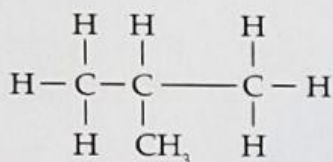


(c) Butyne / Butuna, C_4H_6

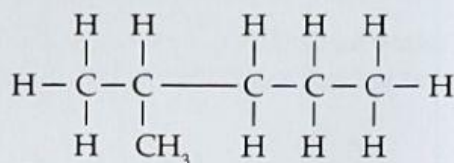


(d) Propanol, C_3H_7OH

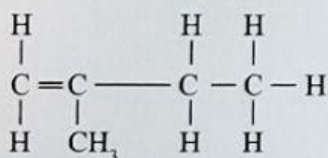
- 2 Name the following compounds according to the IUPAC nomenclature.
 Namakan sebatian-sebatian berikut mengikut sistem penamaan IUPAC.



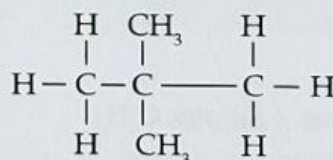
(a)



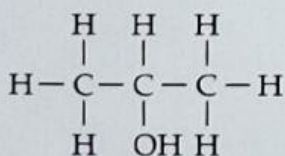
(b)



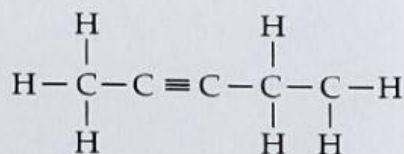
(c)



(d)



(e)



(f)

- 3 Draw the structural formula for the following compounds.
Lukiskan struktur formula bagi sebatian-sebatian berikut.

(a) 3,4-dimethylheptane <i>3,4-dimetilheptana</i>	(d) 2,2-dimethylpropane <i>2,2-dimetilpropana</i>
(b) 2-methylpropan-1-ol <i>2-metilpropan-1-ol</i>	(e) 2-methylbut-2-ene <i>2-metilbut-2-ena</i>
(c) 3-methylbut-1-yne <i>3-metilbut-1-una</i>	(f) 1,2-dibromohexane <i>1,2-dibromoheksana</i>

- 4 The following information shows several compounds.
Maklumat berikut menunjukkan beberapa sebatian.

Ethyl ethanoate
Etil etanoat

Ethanoic acid
Asid etanoik

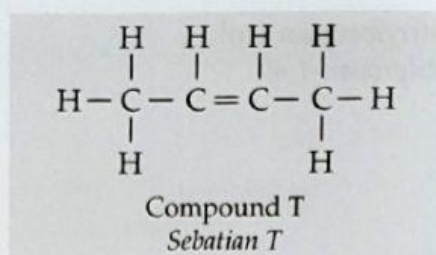
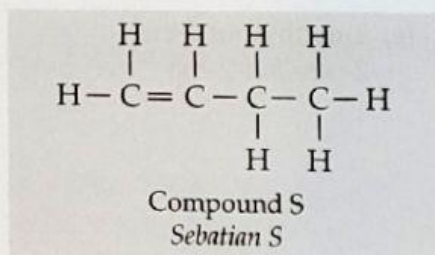
Ethanol
Etanol

- (a) Which compound is used as food preservative in chili sauce?
Sebatian yang manakah digunakan sebagai pengawet makanan dalam sos cili?
-
- (b) Which compound is used to make alcoholic beverages?
Sebatian yang manakah digunakan untuk menghasilkan minuman beralkohol?
-

- (c) Which compound is used as a solvent for nail varnish?
Sebatian yang manakah digunakan sebagai pelarut untuk varnis kuku?

- (d) Which compound is used as raw materials to make pesticide?
Sebatian yang manakah digunakan sebagai bahan mentah untuk menghasilkan racun serangga?

- 5 Diagram below shows the structural formula of compound S and compound T. Both compounds S and T are isomers of a carbon compound.
Rajah di bawah menunjukkan formula struktur bagi sebatian S dan sebatian T. Kedua-dua sebatian S dan T merupakan isomer satu sebatian karbon.



- (a) State the meaning of isomer.
Nyatakan maksud isomer.
- (b) Write the molecular formula for both compounds shown above.
Tuliskan formula molekul bagi kedua-dua sebatian yang ditunjukkan di atas.

- (c) State the names of both compounds using IUPAC nomenclature.
Nyatakan nama kedua-dua sebatian menggunakan penamaan IUPAC.

S: _____ T: _____

- (d) Draw another structure formula for another isomer of the carbon compound.
Lukiskan formula struktur untuk satu lagi isomer bagi sebatian karbon itu.

