Spot Exam Questions 2

Objective Questions
Soalan Objektif

1 What is the meaning of unsaturated hydrocarbon?
Apakah yang dimaksudkan dengan hidrokarbon tak tepu?

A Compound containing only hydrogen atoms and carbon atoms
Sebatian yang mengandungi atom hidrogen dan atom karbon

B Compound that does not contain hydrogen atoms and carbon atoms
Sebatian yang tidak mengandungi atom hidrogen dan atom karbon

C Compound containing only hydrogen atoms and carbon atoms with one single bond
Sebatian yang mengandungi atom hidrogen dan atom karbon sahaja dengan satu ikatan tunggal

D Compound containing only hydrogen atoms and carbon atoms with one double bond
Sebatian yang mengandungi atom hidrogen dan atom karbon sahaja dengan satu ikatan ganda dua

2 Petrol is obtained from the fractional distillation of petroleum. Which statement describes the boiling point and the molecular size of petrol?
Petrol diperoleh daripada penyulingan berperingkat petroleum. Pernyataan manakah menerangkan takat didih dan saiz molekul petrol?

A High boiling point and has large molecular size
Takat didih tinggi dan saiz molekul besar

B High boiling point and has small molecular size
Takat didih tinggi dan saiz molekul kecil

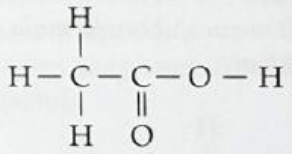
C Low boiling point and has large molecular size
Takat didih rendah dan saiz molekul besar

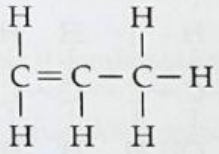
D Low boiling point and has small molecular size
Takat didih rendah dan saiz molekul kecil

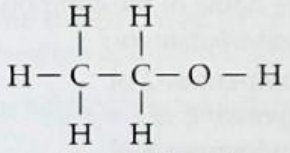
3 What is the correct functional group for the following homologous series?
Apakah kumpulan berfungsi yang betul bagi siri homolog yang berikut?

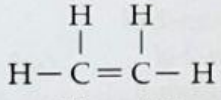
	Homologous series *Siri homolog*	Functional group *Kumpulan berfungsi*
A	Alkene *Alkena*	$-C\equiv C-$
B	Alcohol *Alkohol*	$-\overset{\overset{\displaystyle O}{\|}}{C}-O-$
C	Ester *Ester*	$-OH$
D	Carboxylic acid *Asid karboksilik*	$-\overset{\overset{\displaystyle O}{\|}}{C}-O-H$

4 Which structure is incorrectly named?
Struktur manakah yang dinamakan dengan salah?

A

Ethanoic acid / *Asid etanoik*

B

Propane / *Propana*

C

Ethanol / *Etanol*

D

Ethene / *Etena*

LIVEWORKSHEETS

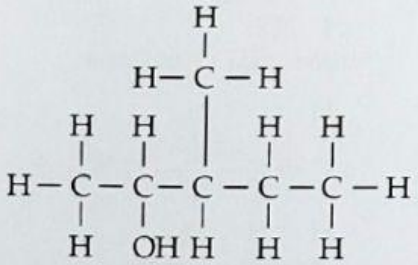
5 Which of the following compound does not belong to the same homologous series?
Antara sebatian berikut, yang manakah tidak termasuk dalam siri homolog yang sama?

A C_2H_5OH
B CH_3OH
C $C_7H_{15}OH$
D C_2H_5COOH

6 Which statement about alkanes is correct?
Pernyataan yang manakah mengenai alkana adalah benar?

A They contain carbon-carbon double bonds
Mengandungi ikatan ganda dua karbon-karbon
B They are converted to alcohols by reaction with steam
Ditukarkan menjadi alkohol melalui tindak balas dengan stim
C They form carbon dioxide and water during combustion
Membentuk karbon dioksida dan air semasa pembakaran
D They undergo addition reaction with halogen
Melalui tindak balas penambahan dengan halogen

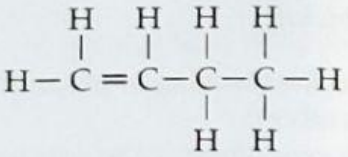
7 Diagram below shows the structural formula of a compound.
Rajah di bawah menunjukkan formula struktur bagi suatu sebatian.



What is the name of the compound?
Apakah nama sebatian itu?

A 3-methylpentan-2-ol
3-metilpentan-2-ol
B 2-methylpentan-3-ol
2-metilpentan-3-ol
C 3-methylhexan-2-ol
3-metilheksan-2-ol
D 2,3-methylhexanol
2,3-metilheksanol

8 Diagram below shows the structural formula of compound X.
Rajah di bawah menunjukkan formula struktur sebatian X.



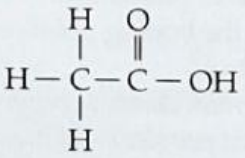
What is the percentage of carbon by mass in compound X?
Berapakah peratus jisim karbon dalam sebatian X?

A 42.85%
B 64.28%
C 82.75%
D 85.71%

9 What are the names of alcohol and carboxylic acid used to prepare ethyl methanoate?
Apakah nama alkohol dan asid karboksilik yang digunakan untuk menyediakan etil metanoat?

A Ethanol and ethanoic acid
Etanol dan asid etanoik
B Ethanol and methanoic acid
Etanol dan asid metanoik
C Methanol and ethanoic acid
Metanol dan asid etanoik
D Methanol and methanoic acid
Metanol dan asid metanoik

10 Diagram below shows a structural formula of compound Y.
Rajah di bawah menunjukkan formula struktur bagi sebatian Y.



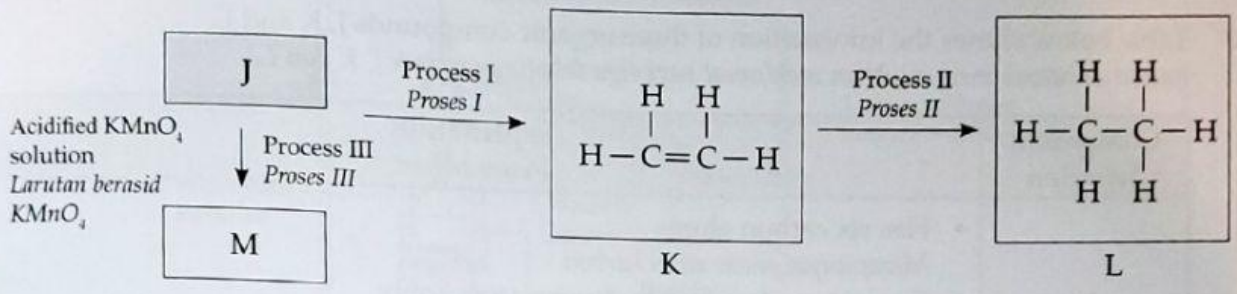
What is the product formed when the compound Y reacts with magnesium?
Apakah hasil yang terbentuk apabila sebatian Y bertindak balas dengan magnesium?

A Magnesium ethanoate and water
Magnesium etanoat dan air
B Magnesium ethanoate and hydrogen gas
Magnesium etanoat dan gas hidrogen
C Magnesium methanoate and water
Magnesium metanoat dan air
D Magnesium methanoate and hydrogen gas
Magnesium metanoat dan gas hidrogen

LIVEWORKSHEETS

Subjective Questions
Soalan Subjektif

1 Diagram below shows the conversion of compound J to other compounds.
Rajah di bawah menunjukkan penukaran sebatian J kepada sebatian-sebatian lain.



(a) Compound J undergoes Process I to produce compound K and water. Name the reaction that occurs in Process I and write the chemical equation.
Sebatian J menjalankan Proses I untuk menghasilkan sebatian K dan air. Namakan tindak balas yang berlaku dalam Proses I dan tuliskan persamaan kimia.

(b) Identify compound J and draw its structural formula.
Kenal pasti sebatian J dan lukiskan formula strukturnya.

(c) Reaction between compound M and ethanol produces ester N. Name and draw the structural formula of ester N.
Tindak balas antara sebatian M dan etanol menghasilkan ester N. Namakan dan lukis formula struktur bagi ester N.

(d) Describe briefly the preparation of ester N named in 1(c) in a laboratory.
Huraikan secara ringkas penyediaan ester N yang dinamakan di 1(c) dalam makmal.

(e) Compounds K and L have similar number of carbon atoms. State the observation when compounds K and L are passed through into bromine water.
Sebatian K dan sebatian L mempunyai bilangan atom karbon yang sama. Nyatakan pemerhatian apabila sebatian K dan sebatian L dialirkan melalui air bromin.

(f) Explain your answer in 1(e).
Terangkan jawapan anda di 1(e).

2 The demand for smaller-sized hydrocarbons is higher because it combusts easily, and is used as fuel.
Permintaan terhadap hidrokarbon yang bersaiz kecil adalah tinggi kerana lebih mudah terbakar dan digunakan sebagai bahan api.

(a) Name and describe the process used to manufacture the smaller sized hydrocarbons.
Namakan dan huraikan proses yang digunakan bagi menghasilkan hidrokarbon bersaiz kecil.

(b) Explain the importance of the process named in 2(a) in helping the oil industry to meet demand for petrol.
Terangkan kepentingan proses yang dinamakan di 2(a) dalam membantu industri minyak memenuhi keperluan petrol.

(c) Name two catalyst used during the process named in 2(a).
Namakan dua mangkin yang digunakan dalam proses yang dinamakan di 2(a).

LIVEWORKSHEETS

(d) The fractions of hydrocarbons in petroleum are separated before carrying out process named in 2(a). State the relationship between the number of carbon atom per molecule and the boiling point of the fraction.
Pecahan hidrokarbon dalam petroleum diasingkan sebelum menjalankan proses yang dinamakan di 2(a). Nyatakan hubungan antara bilangan atom karbon per molekul dengan takat didih pecahan.

3 Table below shows the information of three organic compounds J, K and L.
Jadual di bawah menunjukkan maklumat bagi tiga sebatian organik J, K dan L.

Compound *Sebatian*	**Explanation** *Penerangan*
J	• Has six carbon atoms *Mempunyai enam atom karbon* • Contains carbon and hydrogen atoms only *Mengandungi atom karbon dan atom hidrogen sahaja* • Does not decolourise purple colour of acidified potassium manganate(VII), $KMnO_4$ solution *Tidak menyahwarnakan warna ungu larutan kalium manganat(VII) berasid, $KMnO_4$*
K	• Has two carbon atoms *Mempunyai dua atom karbon* • Soluble in water *Larut dalam air* • Reacts with carboxylic acid to produce sweet smell compound *Bertindak balas dengan asid karboksilik untuk menghasilkan sebatian berbau manis*
L	• Has two carbon atoms *Mempunyai dua atom karbon* • Soluble in water *Larut dalam air* • Reacts with magnesium to produce hydrogen gas *Bertindak balas dengan magnesium untuk menghasilkan gas hidrogen*

Based on the information in the above table,
Berdasarkan maklumat dalam jadual di atas,

(a) determine the molecular formula of organic compounds J, K and L.
tentukan formula molekul bagi sebatian J, K dan L.

(b) State the name of homologous series for each of the compound.
Nyatakan nama siri homolog bagi setiap sebatian itu.

(c) State the functional groups for each of the compound.
Nyatakan kumpulan berfungsi bagi setiap sebatian itu.

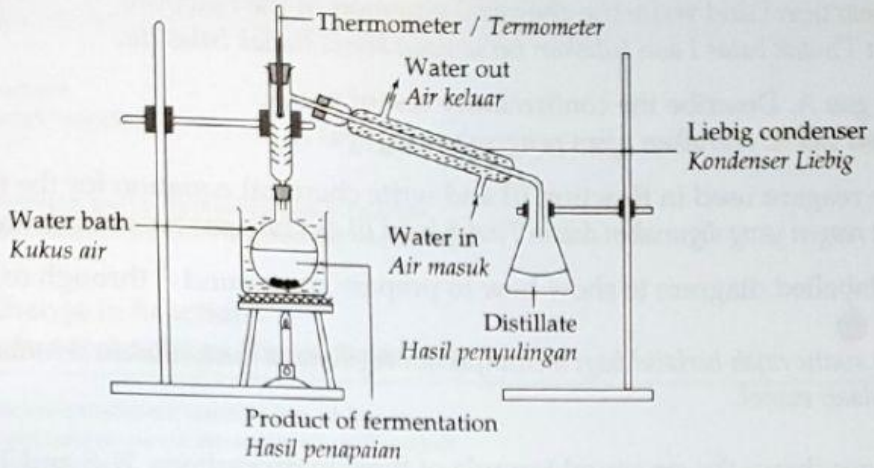
(d) Draw the structural formula for each of the compound.
Lukiskan formula struktur bagi setiap sebatian itu.

(e) Compare the physical properties between the three compounds.
Bandingkan sifat fizik antara ketiga-tiga sebatian tersebut.

LIVEWORKSHEETS

4 Ethanols are used as a solvent for medicines such as cough medicine.
Etanol digunakan sebagai pelarut dalam ubat-ubatan seperti ubat batuk.

(a) Ethanol can be produced by the fermentation of glucose.
Etanol boleh dihasilkan melalui penapaian glukosa.



(i) Write the chemical equation for the fermentation of glucose.
Tuliskan persamaan kimia bagi penapaian glukosa.

(ii) State one observation that would indicate the fermentation is occuring.
Nyatakan satu pemerhatian yang menandakan penapaian telah berlaku.

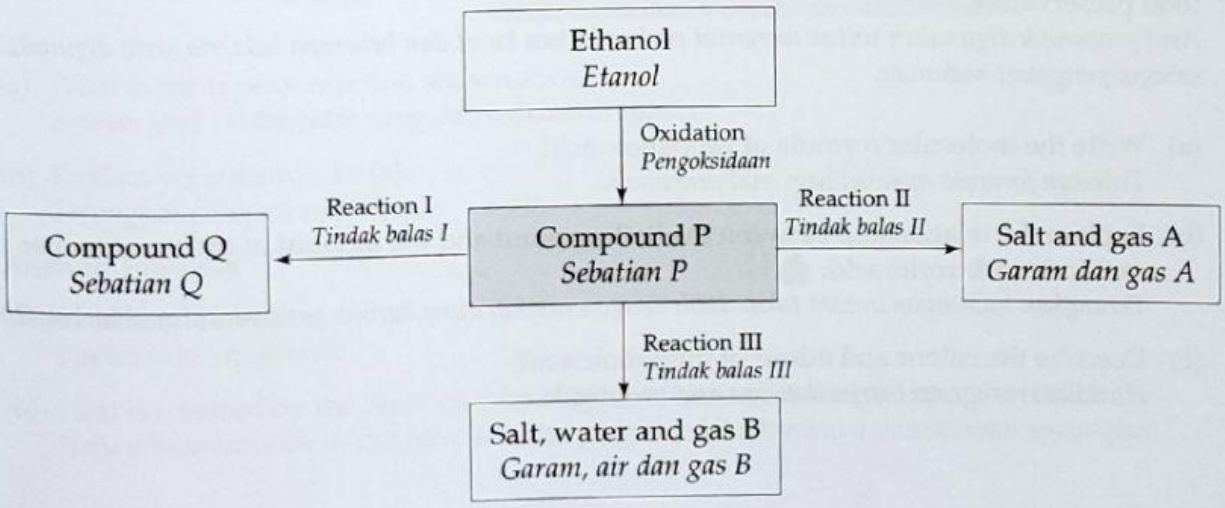
(iii) Fermentation to produce ethanol can also be carried out using fruits. Explain this statement.
Penapaian untuk menghasilkan etanol juga boleh dijalankan menggunakan buah-buahan. Terangkan pernyataan ini.

(b) Ethanol can also be produced through hydration of ethene, C_2H_4 with the presence of catalyst.
Etanol juga boleh dihasilkan melalui penghidratan etena, C_2H_4 dengan kehadiran mangkin.

(i) Name the catalyst used in the reaction.
Namakan mangkin yang digunakan dalam tindak balas itu.

(ii) Write the chemical equation for the reaction.
Tuliskan persamaan kimia bagi tindak balas itu.

5 Diagram below shows the conversion of compound P through several reactions.
Rajah di bawah menunjukkan penukaran sebatian P melalui beberapa tindak balas.



LIVEWORKSHEETS

(a) Compound Q has three carbon atoms and produces sweet smell. Draw the structural formula of the compound.
Sebatian Q mempunyai tiga atom karbon dan menghasilkan bau yang manis. Lukiskan formula struktur sebatian itu.

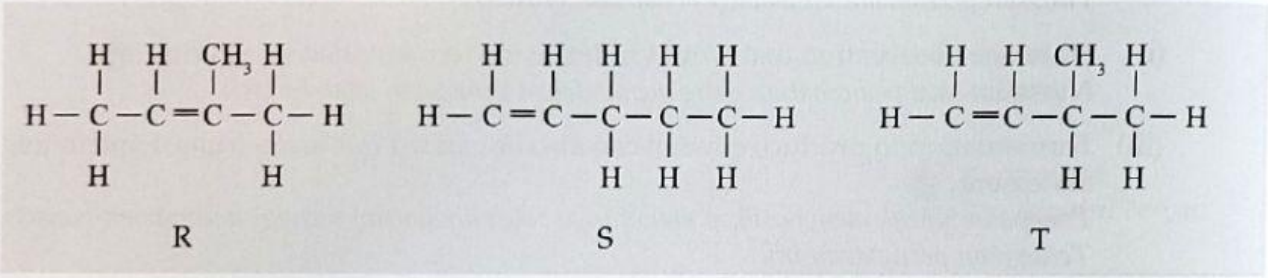
(b) Name Reaction I and write the chemical equation of the reaction.
Namakan Tindak balas I dan tuliskan persamaan kimia tindak balas itu.

(c) Identify gas A. Describe the confirmatory test of gas A.
Kenal pasti gas A. Huraikan ujian pengesahan bagi gas A.

(d) State the reagent used in Reaction III and write chemical equation for the reaction.
Nyatakan reagen yang digunakan dalam Tindak balas III dan tulis persamaan kimia bagi tindak balas itu.

(e) Draw a labelled diagram to show how to prepare compound P through oxidation of ethanol.
Lukiskan suatu rajah berlabel bagi menunjukkan bagaimana menyediakan sebatian P melalui pengoksidaan etanol.

6 Diagram below shows the structural formula of three hydrocarbons, R, S and T.
Rajah di bawah menunjukkan formula struktur bagi tiga hidrokarbon, R, S dan T.



(a) Name the hydrocarbons labelled R, S and T.
Namakan hidrokarbon yang dilabelkan R, S dan T.

(b) Determine whether R, S and T are isomers. Give your reasons.
Pertimbangkan sama ada R, S dan T ialah isomer. Berikan alasan anda.

(c) Compare the chemical properties of the three hydroacarbons. Explain your answer.
Bandingkan sifat kimia bagi ketiga-tiga hidrokarbon itu. Terangkan jawapan anda.

7 Propanoic acid is used to inhibit the growth of mold and various bacteria and is also used as a food preservative.
Asid propanoik digunakan untuk merencat pertumbuhan kulat dan beberapa bakteria serta digunakan sebagai pengawet makanan.

(a) Write the molecular formula of propanoic acid.
Tuliskan formula molekul bagi asid propanoik.

(b) Explain the relationship between the boiling point and the amount of carbon atom per molecule carboxylic acid.
Terangkan hubungan antara takat didih dengan jumlah atom karbon per molekul asid karboksilik.

(c) Describe the colour and odour of propanoic acid.
Huraikan mengenai warna dan bau asid propanoik.

LIVEWORKSHEETS