Structure {Paper02}

[SBPtrial07-05]

(a) Compound J: alkene
Compound K:alcohol

(b) (i) butan-2-ol

(ii) hydration// addition with water

(c) (i) orange colour change to green

(ii) C_3H_7COOH // **$C_4H_8O_2$**

(d) (i) $C_4H_8 + 6O_2 \rightarrow 4CO_2 + 4H_2O$

(ii) Mol J = mass / molar mass = 5.6 / [12x4 + 8] = 5.6/56
= 0.1 √1

Ratio

	Compound J		CO_2
Ratio from equation	1	:	4
Ratio from calculation	0.1	:	0.1 X 4/1 = 0.4 √2

Volume = mol x molar volume at rc
= 0.4 x 24 = 9.6 dm^3 √3 UNIT MUST CORRECT

[SBPmidyearF508-06]

a A compound that contain element of carbon and derive from living organisms.

b (i) C_2H_4
(ii) ethene
(iii) double bond between carbon atoms
(a: C=C)

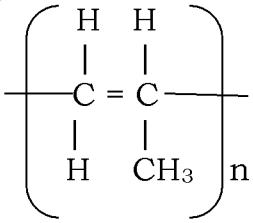
c (i) Acidified potassium manganat (VII) // Acidified potassium dicromate (VI)
(ii) Oxidation
(iii) Purple to colourless // orange to green

d (i) $C_2H_4 + H_2O \rightarrow C_2H_5OH$
(ii) Alcohol
(iii) Temperature 300 °C // Pressure 60 atmosphere // concentrated phosphoric acid

[MRSM06-06]

(a) alkene

(b)



(c) $C_3H_6 + H_2 \rightarrow C_3H_8$

(d) (i) $2\ C_3H_6 + 9\ O_2 \rightarrow 6\ CO_2 + 6\ H_2O$ // $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$

(ii)

percentage of C in propane	**percentage of C in propene**
$\%C = \frac{3C}{C_3H_8} \times 100\%$ $= \frac{3x12}{44} \times 100\%$ = 81.8 % -- [markah 1]	$\%C = \frac{3C}{C_3H6} \times 100\%$ $= \frac{3x12}{42} \times 100\%$ = 85.7 % --- [markah 2]

∴the percentage of C in propene is higher than the percentage of C in propane –-> [markah 3]

(e)(i) 1. Flow the propene gas into the steam
2. at temperature 300 C
3. 60 atm of pressure
4. and using the phosphoric acid, H_3PO_4

(ii) $C_3H_6 + H_2O \rightarrow C_3H_7OH$// $C_3H_6 + H_2O \rightarrow C_3H_8O$

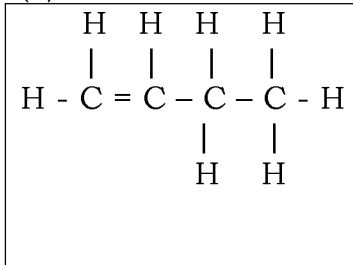
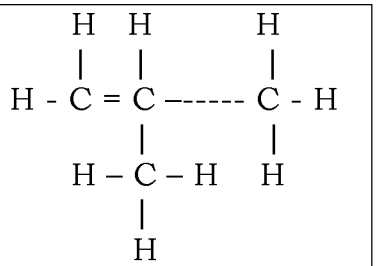
[MRSM04-06]

(a) Compound J : alkene Compound K : alcohol

(b)(i) Butan-2-ol

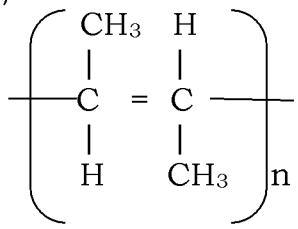
(ii) $C_7H_{15}OH$ [*ikut formula* $C_nH_{2n+1}OH$]

(c)

	
but–1–ene// butene	2-methylpropene

(d) (i) polymerisation

(ii)



(e) (i) Purple change to colourless

(ii) $C_4H_9OH \xrightarrow{[O]} C_3H_7COOH$

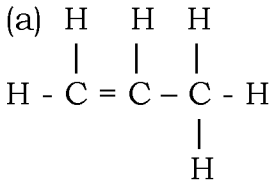
(f)

J	K
%C = 4X12 / [4x12+ 1X8] X 100% = 48/56 X 100 % = 85.71%	%C = 4X12 / [4x12+ 1X9 + 16 + 1] X 100% = 48/74 X 100 % = 64.86 %

Compound J has higher percentage of soot than compound K

[MRSM03-04]

(a)



(b) Hydrogenation// addition of hydrogen gas

(c) n $(C_3H_6) \rightarrow [C_3H_6]_n$

(d) Gas propene was mix with steam/water at 300 C,
with 60 atm pressure and
used phosphoric acid, H_3PO_4 as catalyst

(e) Acidified potassium manganate(VII) solution//
Potassium manganate(VII) solution was add with HCl/ H_2SO_4 acid

(f) (i) $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4H_2O$

(ii) 1. Mol = $\frac{\text{Volume}}{\text{molar volume @RC}}$ = 2.0/24 = 0.083

2. Ratio between C_3H_8 to H_2O
1 mol : 4 mol
0.083 mol : 0.332 mol

3. mass = mol X molar mass
= 0.332 X [2X ram H + 1 X RAM O]
= 0.332 x 18 = 5.976 g

[SPM09-04]

(a)(i) alkene

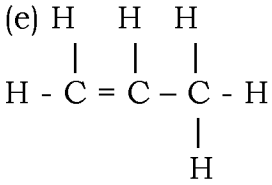
(ii) C_nH_{2n}

(b) 1. The size of molecules is increases/ bigger
2. Strong intermoleculer force / van Der Waals between molecule increases
3. more heat energy is required to overcome the forces

(c) $C_2H_4 + H_2O \rightarrow C_2H_5OH$

(d) $n\ C_2H_4 \rightarrow [C_2H_4]\ n$

(e)



[SPM08-04]

(a) Ethanol

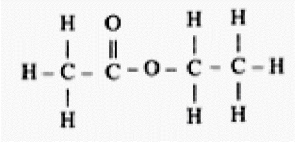
(b) $C_nH_{2n+1}OH$

(c) (i) Carbon dioxide

(ii) m = 3 , n = 2

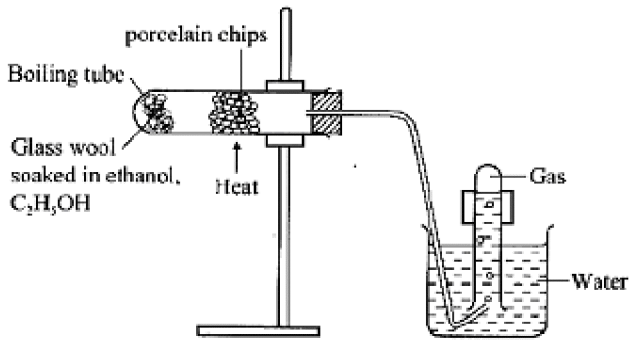
(d) (i) Ethyl ethanoate

(ii)



(e) (i) [*Choose any one of the following answers*]
Porcelain chips or phosphoric acid or aluminium oxide

(ii)



[SPM04-06]

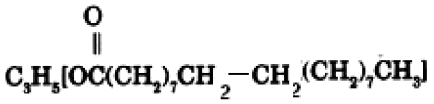
(a) (i) Hydrogenation

(ii) Vegetable oil changes from liquid to solid (or changes vegetable oil from unsaturated fats to saturated fats or changes double bond in vegetable oil molecule to single bond)

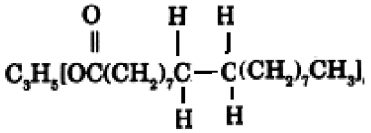
(b) (i) Catalyst X : Nickel (or platinum)
Temperature : 100°C (or 200°C)

(ii) 1. Presence of **catalyst reduces the activation energy**
2. At a **high** temperature, particles possess **high kinetic energy** and
3. hence **effective collision increases** and rate of reaction **increases**
4.

(iii)



or



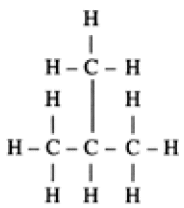
(c) **Palm** oil (or **coconut** oil or **corn** oil or other **named** oil example)

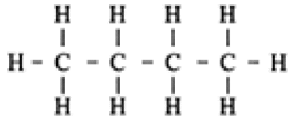
[SBPtrial08-05]

(a) C_nH_{2n+2}
n = 1, 2, 3, ...

(b) | |
A : carbon-carbon double bond // - C = C –
B : carboxyl group // - COOH

(c)





(d) (i) Butyl propanoate

(ii) Sweet / pleasant /fragrance / fruity smell

(e) (i) $C_4H_8 + 6O_2 \rightarrow 4CO_2 + 4H_2O$

(ii) mol A = 11.2 // $\frac{0.2}{56}$

mol CO_2 = 4 x 0.2 // 0.8

No of molecule CO_2 = $0.8 \times 6.2 \times 10^{23}$ // 4.96×10^{23}

[MRSM10-06]

(*a*) $C_nH_{2n+1}COOH$

(*b*) methyl propanoate

(*c*)

Physical property	Compound K	Compound L
Odour	*sharp smell, pugent smell*	*sweet smell*
Solubility	*yes*	*no*

(*d*) (i) 1. Add 50 cm^3 of propanoic acid into 50 cm^3 pure methanol in round bottom flask
2. add the porcelain chips and 5 cm^3 concentrated sulphuric acid
3. heat the mixture until sweet smell produce

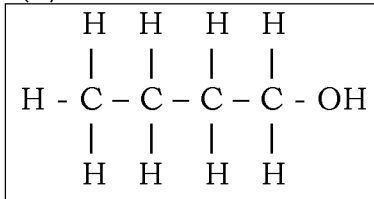
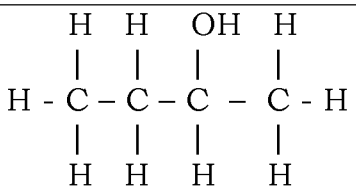
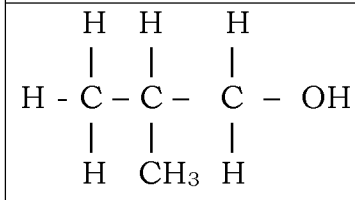
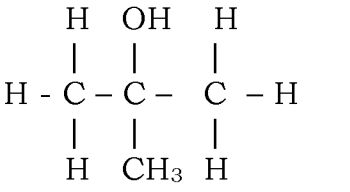
(ii) $C_2H_5COOH + CH_3OH \rightarrow C_2H_5COOCH_3 + H_2O$

(iii)

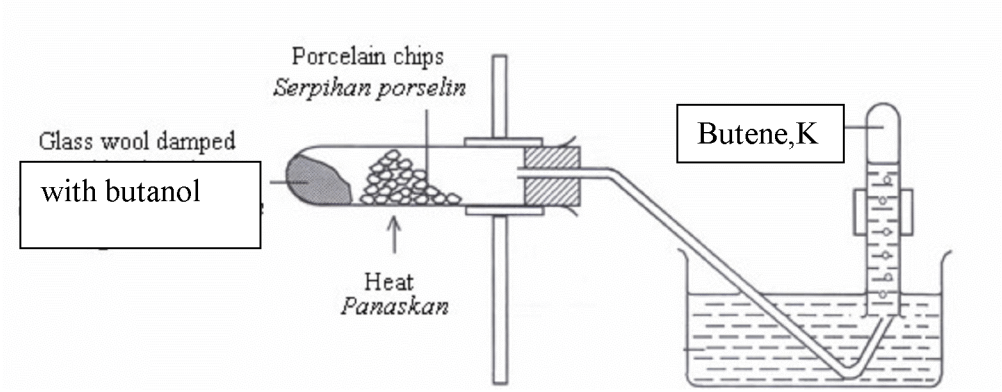
[propan-1-ol] [propan-2-ol]

[MRSM11-06]

(*a*) (i) *alcohol*
(ii)

 Butan-1-ol	 Butan-2-ol
 methylpropan-1-ol	 methylpropan-2-ol

(*b*)



(c) (empirical formula)n = molecular mass
$(C_2H_5)n = 58$
[12x2 + 1x5]n = 58------ markah 1
29n = 58
n = 2 ---- markah 2

molecular formula = C_4H_{10} --- markah 3

(d) 1. 2 cm^3 of K was filled into test tube, and was added 3 drop of bromine/ acidified potassium mangante(VII) solution.
2. 2 cm^3 of L was filled into test tube, and was added 3 drop of bromine/ acidified potassium mangante(VII) solution.
3. Test tube for L, brown bromine unchanged/ purple $KMnO_4$ unchanged //
Test tube for K, brown bromine turn to colourless// purple $KMnO_4$ turn to colourless

(e) Acidified potassioum manganate(VII) solution// acidified potassium dichromate(VI) solution

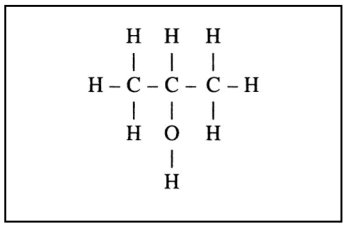
[SBPtrial09-05]

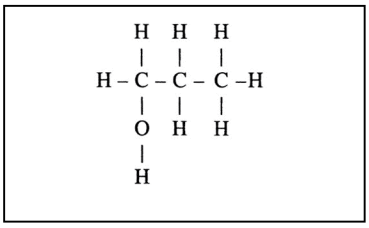
(a) $2C_3H_8O + 9O_2 \rightarrow 6CO_2 + 8H_2O//$
$C_3H_8O + 9/2O_2 \rightarrow 3CO_2 + 4H_2O//$

(b) (i) Oxidation

(ii) Add 2 cm^3 of dilute sulphuric acid into a test tube that containing 2 cm^3 potassium manganate (VII) solution/potassium dichromate (VI) solution
Pour 2 cm^3 of alcohol J into the above acidified solution

(iii)





(c) (i) Propyl propanoate

(ii) Sweet / pleasant smell

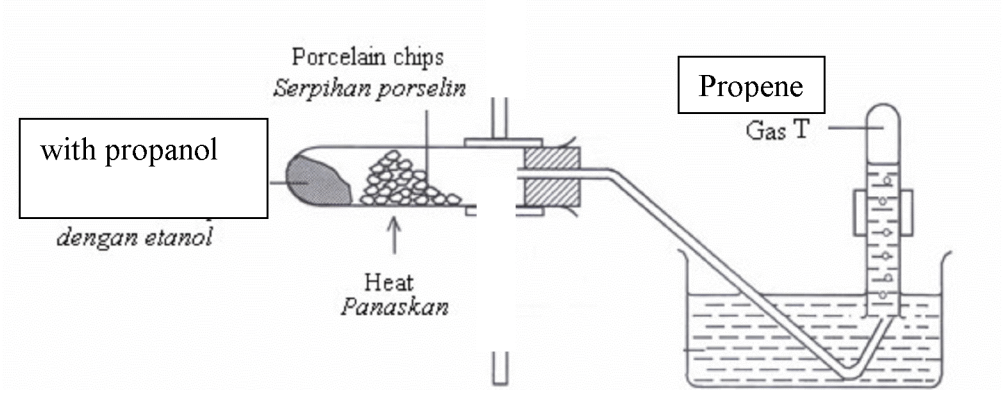
(d) Flow / Bubble propene and propane into two different test tubes containing bromine water / acidified potassium manganate(VII)

Propene : Brorwn / purple turns colourless
Propane : no change

[MRSM07-05]

(a) Propanol // propan-1-ol

(b)



Name of compound P : ...1,2 - dibromopropane

(d) 1. Heat 2 cm^3 of compound Y with 2 cm^3 acidified potassium manganate (VII) Solution in test tube
2. with present of 5 drop of concentrated sulphuric acid
3. stop when purple change to colourless

(e) (i) Oxidation

(ii) $C_3H_7OH \xrightarrow{[O]} C_2H_5COOH$

[MRSM05-05]

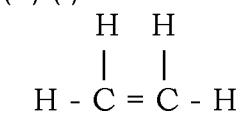
(a) Carbon dioxide

(b) 1. Heat 2 cm^3 alcohol Z with 2 cm^3 propanoic acid in test tube
2. with present 5 drops of concentrated sulphuric acid
3. until sweet smell present

(c) (i) Orange colour change to green

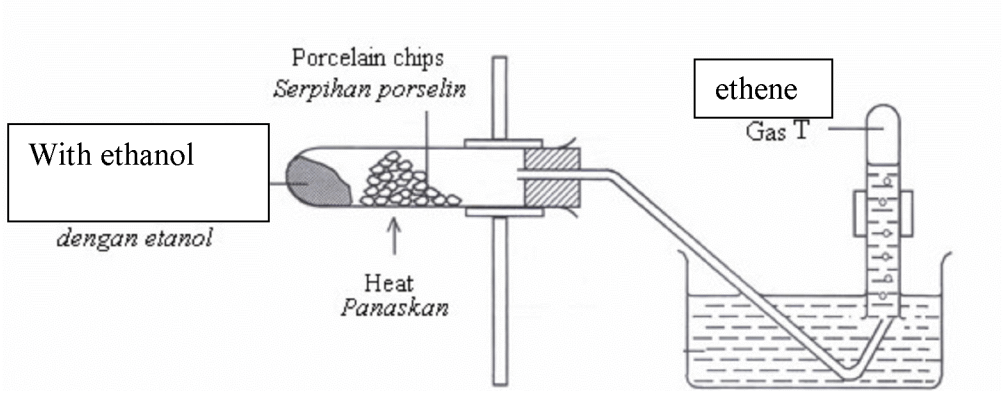
(ii) $C_2H_5OH \xrightarrow{[O]} CH_3COOH$

(d) (i)



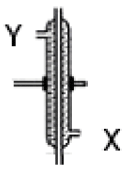
ethene

(ii)



[SPM03-04]

(a)



(b) **Heat** supplied is **uniform** (or prevents the solution from evaporating too fast)

(c) (i) Esterification
(ii) $C_2H_5OH + CH_3COOH \rightarrow CH_3COOC_2H_5 + H_2O$

(d) (i) Propyl ethanoate

(ii) [Note: *Choose any one of the following answers*]

1. Fruity smell
2. Colourless liquid
3. Low boiling point (volatile)
4. Insoluble in water

(e) (i) $C_2H_5OH \rightarrow C_2H_4 + H_2O$

(ii) $C_2H_5OH + 2[O] \rightarrow CH_3COOH + H_2O$

(f) Butane

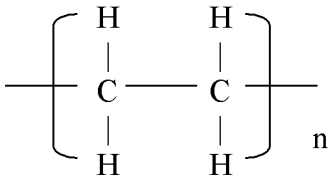
[SBPtrial05-06] {Translate}

(a) pempolimeran ialah proses gabungan monomer-monomer membentuk rantai panjang melalui tindak balas kimia tertentu.

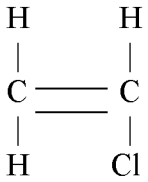
(b)

Monomer	**Polimer**
Asid amino	***Protein***
Glukosa	Kanji
Etena	***Polietena/politena***
Kloroetena	Polikloroetena(PVC)
Isoprena	Getah asli

(c)



(d) (i)



(ii) tidak berkarat

(e) (i) asid etanoik/asid formik /sebarang asid yang dinamakan

(ii) larutan ammonia/sebarang larutan alkali yang dinamakan.

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