Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Organic analysis

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

(a) (mixture of) compounds/substances with similar boiling points

Allow similar number of carbon atoms / chain length / M_r / size
Ignore same boiling point / number of C atoms / chain length / M_r / size
Ignore reference to similar melting points
Ignore reference to similar chemical properties

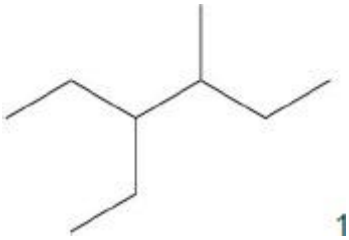
1

(b) zeolites / aluminosilicates

Ignore aluminium oxide

1

(c)



1

Must be skeletal formula
Ignore working, including other forms of structure of this compound.

1

(d) **M1** C_9H_{20}

M2 $C_9H_{20} + 14\ O_2 \rightarrow 9\ CO_2 + 10\ H_2O$

*For **M2** allow ECF from their molecular formula, providing it is an attempt at the molecular formula of a hydrocarbon*
*Penalise **M1** only for not using molecular formula*
Allow multiples and fractions

2

(e) (C=O) bonds vibrate (at IR frequency) / (IR/it makes) bonds vibrate **or**

net change in dipole moment of molecule during (asymmetric) vibration **or**

(C=O) bonds are polar

Do not allow that CO_2 is a polar molecule / has a dipole

1

(f) **M1** acid rain / respiratory problems

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M1 *Allow direct consequences of acid rain; allow smog; allow production of ground level ozone*

M2 catalytic converters

M2 *allow description of process that occurs in catalytic converter but must include reference to a (named) catalyst*

2

(g) no net emissions of carbon dioxide/CO_2 to the atmosphere

Allow explanation showing that same amount of CO_2 taken in and released to the atmosphere

Answer needs to refer to carbon dioxide (not just carbon)

1

[9]

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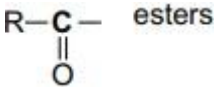
Q2.

(a) C=O

1

(b) Tick in the box for 7 ONLY

1

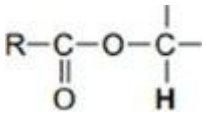
(c)  esters

Ignore acids

1

(d) M1 (Quartet) because neighbouring C has 3H

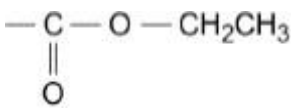
M2 (At □ = 4.1 ppm) because connected to single bonded O of ester or



M3 (Triplet) because neighbouring C has 2H

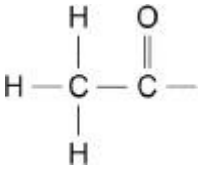
M4 (At □ = 1.26 ppm) because R_2CH_2 or RCH_3

M5



Ignore use of integration

5

(e) 

1

(f) Cannot deduce splitting patterns of peaks (at about □ = 2.60)

Or

No integration values

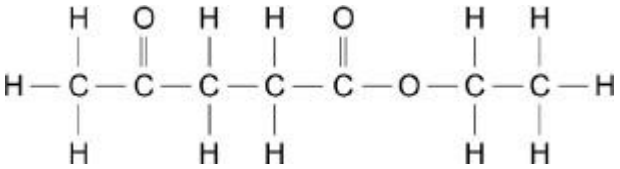
Allow

Peaks at □ = 2.60 and □ = 2.56 ppm overlap

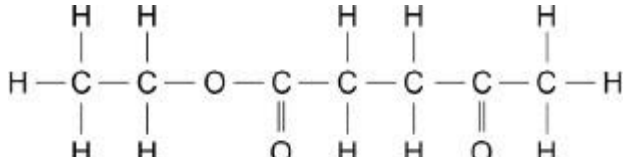
OR

spectrum at □ = 2.60 is second order

1

(g) 

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1

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