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**GCSE Combined Science**

**(and Chemistry)**

**Student Answer Booklet**

**Organic chemistry**

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**Level 1 ANSWERS**

**GCSE Chemistry – Organic chemistry**

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4. **a**
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9. **d**
10. **c**
11. **a**
12. **a**
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14. **b**
15. **a**
16. **c**
17. **b**
18. **c**
19. **a**
20. **c**

**Exam Practice answers:**

**Q1:**

(a)     C5H12

1

(b)     Alkanes

1

(c)     (3) CO2

1

(4) H2O

1

allow for **1** mark

4 CO2 + 3 H2O

(d)     contains hydrogen and carbon

1

(hydrogen and carbon) only

1

Q2:

(a)     Flask

1

(b)     Fractional distillation

1

(c)     **A** – boiling

in this order

1

**B** – condensing

1

(d)     Pentane

1

(e)     Formulation

1

(f)     the fuel is a pure compound

1

and crude oil is a mixture

**or**

the fuel is made up of four hydrocarbons

allow crude oil contains a large number of compounds and the fuel contains four

and crude oil could have many more

1

(g)     (35 + 37 + 37 / 3) = 36.33

1

36

1

allow (35 + 48 + 37 + 37 / 4 =) 39(.25) for **1** mark

[10]

Q3:

(a)     Colourless liquid / condensation / water

1

(b)     incomplete combustion of the fuel

1

because not enough oxygen

1

(c)     Sulfur dioxide

1

[4]

CHEMISTRY ONLY QUESTIONS FROM THIS POINT

**Q4:**

(a)     (i)      fizz / effervescence / bubbles

allow calcium carbonate decreases in size or dissolves

1

because carbon dioxide produced / released

allow because gas produced / released

1

limewater turns cloudy / milky / white

1

because (a precipitate of or solid) calcium carbonate forms

allow because of carbon dioxide if not already credited

1

(ii)      

allow -OH

do not allow lower case ‘h’

1

(iii)     acid

must be in this order

ignore any name of an acid

1

ester(s)

1

**Q5:**

(a)     oxygen

allow correct answer shown in box if answer line blank

1

(b)     vinegar

allow correct answer shown in box if answer line blank

1

(c)     C

1

(d)     Ester

1

(e)     pleasant smell

1

volatile

allow low boiling point / evaporates

1

[6]

**Q6:**

(a)     colourless

ignore clear

1

(b)     (i)      decomposition

1

(ii)     C8H18

1

(c)     (i)
 

two single trailing bonds extending from the carbons (through the brackets) **1** mark

five single bonds (1 C–C bond and 4 C–H bonds) **1** mark

2

(ii)     any **two** from:

•        (polymers made from) cornstarch are biodegradable

•        less space needed in landfill sites

•        polymers from cornstarch come from a renewable source.

allow converse for poly(ethene)

2

[7]

**Q7:**

(a)     *(ethene)*



1

*(polyethene)*



1

(b)     any **four** from:

•        poly(ethene) produced by addition polymerisation whereas polyester by condensation polymerisation

•        poly(ethene) produced from one monomer wheareas polyester produced
from two different monomers

•        poly(ethene) produced from ethene / alkene whereas polyester from a (di)carboxylic acid and a diol / alcohol

•        poly(ethene) is the only product formed whereas polyester water also
produced

•        poly(ethene) repeating unit is a hydrocarbon whereas polyester has an ester linkage

4

[6]

**Q8:**

(a)     (i)      many ethene / molecules / monomers

accept double bonds open / break

1

         join to form a long hydrocarbon / chain / large molecule

accept addition polymerisation

ignore references to ethane

correct equation gains **2** marks

1

(ii)     (can be deformed but) return to their original shape (when
heated or cooled)

ignore ‘it remembers its shape’

1

(iii)     cross links / extra bonds in PEX

accept inter-molecular bonds
ignore inter-molecular forces

1

         molecules / chains in PEX are held in position

accept rigid structure

1

         molecules / chains in PEX unable to slide past each other / move

it = PEX throughout

1