MARK SCHEMES – Chemistry Unit 7/8 homework

Q1

(a) 2.38

*if answer incorrect, allow **1** mark for 2.37 to full calculator display*

or

for (4.82 + 2.16 + 0.15) / 3

2

(c) a molecule

1

(d) alkanes

1

(g) any **two** from:

- cracking uses a catalyst, fractional distillation doesn't
- cracking breaks up molecules, fractional distillation separates them
- cracking is a chemical process, fractional distillation is a physical process

2

Q2

Level 3: Relevant points (reasons/causes) are identified, given in detail and logically linked to form a clear account.	5-6
Level 2: Relevant points (reasons/causes) are identified, and there are attempts at logically linking. The resulting account is not fully clear.	3-4
Level 1: Points are identified and stated simply, but their relevance is not clear and there is no attempt at logical linking.	1-2
No relevant content	0
Indicative content • crude oil is heated • hydrocarbons/compounds vaporise • vapours enter the fractionating column near the bottom • there is a temperature gradient in the column **or** the column is hotter at the bottom and cooler at the top • vapours / hydrocarbons / fractions condense • to become liquid • at their boiling points • different substances have different boiling points • so the different fractions collect at different levels • hydrocarbons / fractions with smallest molecules have lowest boiling points • collect as gases at top of the column where temperature is lower	

• hydrocarbons / fractions with larger molecules have higher boiling points • so collect nearer the bottom • where temperature is higher	

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Q3 (a) Colourless liquid / condensation / water

1

(b) incomplete combustion of the fuel

1

because not enough oxygen

1

(c) Sulfur dioxide

1

Q4 (a) more than 1 dot in a vertical line

1

(b) correct equation and substitution 7/39

accept R_f = distance moved by spot C / distance moved by solvent

1

calculation and answer 0.1795

1

answer to 2 significant figures 0.18

1

(c)

Level 3: The plan would lead to the production of a valid outcome. All key steps are identified and logically sequenced.	5-6
Level 2: The plan would not necessarily lead to a valid outcome. Most steps are identified, but the plan is not fully logically sequenced.	3-4
Level 1: The plan would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.	1-2
No relevant content	0
Indicative content • put dots of known colours, and a dot of the ink on a pencil line on the chromatography paper. • place the bottom of the paper in water, making sure the start line is above the water • leave for solvent to rise up through paper. • when solvent near top of paper, remove and leave to dry. • compare positions of dots for known colours with those from ink	

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