

## Questions

Q1.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

Diesel oil contains alkanes.

These alkanes are part of an homologous series.

Which statement about compounds in this homologous series is true?

- A they have the same chemical formula
- B they have the same empirical formula
- C they have the same general formula
- D they have the same molecular formula

(1)

(Total for question = 1 mark)

Q2.

Crude oil is found in the Earth's crust.

Which of the statements about crude oil is correct?

- A crude oil is a finite resource
- B crude oil is a mixture of the elements hydrogen and carbon
- C all of the molecules in crude oil contain rings of carbon atoms
- D crude oil is used in cars as a fuel

(1)

(Total for question = 1 mark)

Q3.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

When crude oil is fractionally distilled, the demand for some fractions is more than the amount produced.

Figure 11 shows the relative amounts of each fraction in a crude oil and the relative demand for each of these fractions.

<b>fraction</b>	<b>relative amount</b>	<b>relative demand</b>
gases	2	6
petrol	12	29
kerosene	16	11
diesel oil	24	29
fuel oil	37	21
bitumen	9	4

**Figure 11**

Which of the following shows the fractions where the relative demand is greater than the relative amount in the crude oil?

- A kerosene, diesel oil, bitumen
- B gases, petrol, diesel oil
- C gases, petrol, kerosene
- D petrol, diesel oil, fuel oil

(1)

(Total for question = 1 mark)

Q4.

Most of the fuels used today are obtained from crude oil.

Which statement about crude oil is correct?

(1)

- A crude oil is a compound of different hydrocarbons
- B crude oil is a mixture of hydrocarbons
- C crude oil contains different hydrocarbons, all with the same molecular formula
- D crude oil is an unlimited supply of hydrocarbons

(Total for question = 1 mark)

Q5.

Which of the following is the formula of a hydrocarbon?

(1)

- A  $C_6H_5OH$
- B  $CH_2OHCH_2OH$
- C  $H_2C=CHCH_2CH_3$
- D  $C_6H_{12}Cl_2$

(Total for question = 1 mark)

Q6.

Plants release oxygen into the atmosphere.

What is the name of the process that releases oxygen into the atmosphere?

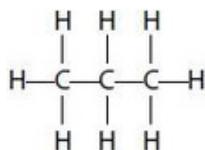
(1)

- A combustion
- B oxidation
- C photosynthesis
- D polymerisation

(Total for question = 1 mark)

Q7.

The structure of a molecule of propane is shown as



Which product is formed when there is incomplete combustion of propane?

(1)

- A sulfur dioxide
- B oxygen
- C hydrogen
- D carbon monoxide

(Total for question = 1 mark)

Q8.

Which test shows a gas is oxygen?

(1)

- A a few drops of limewater will turn cloudy when shaken with the gas
- B a glowing splint will relight when placed in the gas
- C a lighted splint placed in the gas will cause a pop
- D a piece of damp red litmus paper will turn blue when placed in the gas

(Total for question = 1 mark)

Q9.

Answer the questions with a cross in the boxes you think are correct . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

The two most common gases in today's atmosphere are nitrogen and oxygen.

(i) What is the third most common gas in today's atmosphere?

(1)

- A argon
- B butane
- C chlorine
- D hydrogen

(ii) What is the percentage of oxygen in today's atmosphere?

(1)

- A 0.04
- B 1
- C 21
- D 78

(Total for question = 2 marks)

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Q10.

Answer the question with a cross in the box you think is correct . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

Air contains several gaseous elements.

Which of these shows the three most common gaseous elements in air, listed in order from the most common to the least common?

- A oxygen, chlorine, nitrogen
- B nitrogen, oxygen, hydrogen
- C oxygen, nitrogen, helium
- D nitrogen, oxygen, argon

(1)

(Total for question = 1 mark)

Q11.

Crude oil is found in the Earth's crust.

The substances ethane,  $C_2H_6$ , octane,  $C_8H_{18}$ , and pentadecane,  $C_{15}H_{32}$ , are all found in crude oil.

These substances

- A have the same formula
- B have the same boiling point
- C are in the same homologous series
- D form different products when completely combusted in air

(1)

(Total for question = 1 mark)

Q12.

Crude oil is a complex mixture of substances.

Crude oil can be separated into useful fractions by fractional distillation.

Figure 7 shows a fractional distillation column and the fractions produced when a sample of crude oil is distilled.

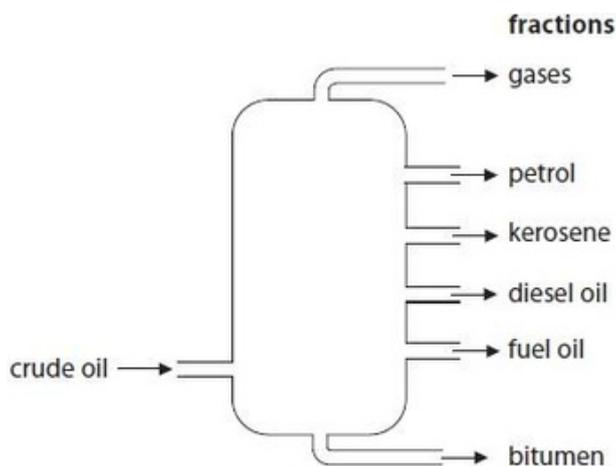


Figure 7

The properties of these fractions vary from the top of the column to the bottom of the column.

Which of the following is a trend in a property of the fractions obtained from the top of the column to those obtained from the bottom?

- A the average number of carbon atoms in molecules present decreases
- B the ease of ignition increases
- C the boiling points decrease
- D the viscosities increase

(1)

(Total for question = 1 mark)

Mark Scheme

Q1.

Question number	Answer	Mark
	C they have the same general formula	(1)
	A, B and D not correct as compounds in homologous series have different chemical, empirical and molecular formulae.	AO1

Q2.

Question Number	Answer	Mark
	A crude oil is a finite resource <b>The only correct answer is A</b> <i>B is not correct because crude oil is a mixture of compounds</i> <i>C is not correct because most molecules are chains</i> <i>D is not correct because crude oil must be fractionated first</i>	(1) AO 1 1

Q3.

Question number	Answer	Mark
	B gases, petrol, diesel oil This is the only correct answer. A is incorrect because only diesel oil has a relative demand greater than the relative amount obtained C is incorrect only gases and petrol have a relative demand greater than the relative amount obtained D is incorrect only petrol and diesel oil have a relative demand greater than the relative amount obtained	(1)

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Q4.

Question number	Answer	Mark
	<b>B</b> Crude oil is a mixture of hydrocarbons is the only correct answer Answer <b>A</b> , <b>C</b> and <b>D</b> are factually incorrect	<b>(1)</b>

Q5.

Question number	Answer	Mark
	C	<b>(1)</b>

Q6.

Question number	Answer	Mark
	<b>C</b> photosynthesis is the only correct answer <b>A</b> and <b>B</b> are processes that required oxygen <b>D</b> is a process that does not involve oxygen	<b>1</b>

Q7.

Question number	Answer	Mark
	D	<b>(1)</b>

Q8.

Question number	Answer	Mark
	<b>B</b> a glowing splint will relight when placed in the gas is the only correct answer <b>A</b> describes the test for carbon dioxide <b>C</b> describes the test for hydrogen <b>D</b> describes the test for an alkaline gas such as ammonia	<b>(1)</b>

Q9.

Question number	Answer	Mark
(i)	<p><b>A</b> argon This is the only correct answer.</p> <p><b>B</b> is incorrect because butane is not found in the air  <b>C</b> is incorrect because chlorine is not found in the air  <b>D</b> is incorrect because hydrogen is only found in the air in extremely small amounts</p>	(1)

Question number	Answer	Mark
(ii)	<p><b>C</b> 21 This is the only correct answer.</p> <p><b>A</b>, <b>B</b> and <b>D</b> are incorrect</p>	(1)

Q10.

Question number	Answer	Mark
	<p><b>D</b> nitrogen, oxygen, argon is the only correct answer</p> <p><b>A</b> is not correct because nitrogen is the most common gas  <b>B</b> is not correct because hydrogen is not the third most common gas  <b>C</b> is not correct because nitrogen is the most common gas</p>	(1)

Q11.

Question Number	Answer	Mark
	<p><b>C</b> are in the same homologous series</p> <p><b>The only correct answer is C</b></p> <p><i><b>A</b> is not correct because they have different formulae</i></p> <p><i><b>B</b> is not correct because they have different bpts</i></p> <p><i><b>D</b> is not correct because they all form carbon dioxide and water</i></p>	(1) AO 2 1

Q12.

Question Number	Answer	Mark
	<p><b>D</b> the viscosities increase</p> <p><b>The only correct answer is D</b></p> <p><i>A is not correct because average number of carbon atoms increases</i></p> <p><i>B is not correct because ease of ignition decreases</i></p> <p><i>C is not correct because boiling points increase</i></p>	<p><b>(1)</b> AO 1 1</p>