

Past-paper walk-through

Formulae, functional groups and terminology ■ 11.1

eXercise

Questions in this set

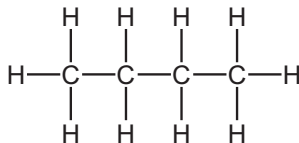
- 0620/22 N25 Q34 ■ 1 mark
- 0620/23 N25 Q37 ■ 1 mark
- 0620/42 N25 Q5 ■ 12 marks
- 0620/42 N25 Q6 ■ 8 marks
- 0620/43 N25 Q6 ■ 17 marks
- 0620/21 J25 Q33 ■ 1 mark
- 0620/23 J25 Q34 ■ 1 mark
- 0620/42 M25 Q6 ■ 14 marks

Reading the mark scheme

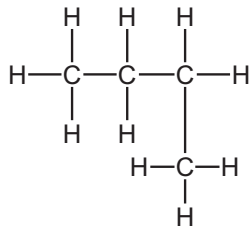
- **B1** a mark that stands on its own – the point is either made or not.
- **M1** a *method* mark: the right approach, even if the number is wrong.
- **A1** an *answer* mark, and it usually needs its M mark first.
- **C1** a working mark on the way to the answer.
- **//** separates answers the examiner accepts equally.
- **ecf** = error carried forward: a later part is marked on your own earlier answer.
- **owtte** = “or words to that effect” – the wording need not match.

Question 34

0620/22 N25 ■ Q34 ■ 1 mark

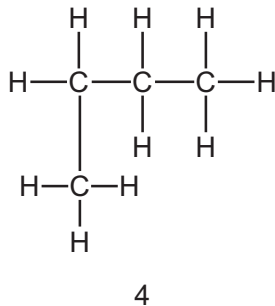
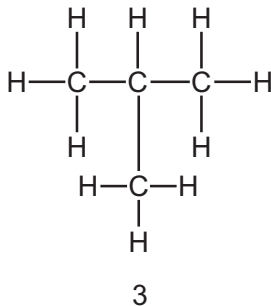
34 Which structures are structural isomers of each other?

1



2

Question 34



- A** 1, 2, 3 and 4
- B** 1, 2 and 4 only

Question 34

C 1 and 3 only

D 2 and 4 only

Solution 34

Answer: **C**

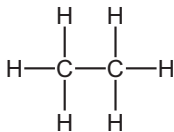
Why

- Structural isomers must have the *same* molecular formula but a different arrangement of atoms.
- So count the carbons and hydrogens in each structure before comparing anything.
- Only structures with identical formulae can be isomers; the difference between them is the branching.

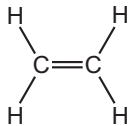
Question 37

0620/23 N25 ■ Q37 ■ 1 mark

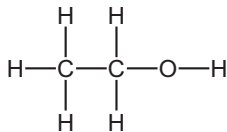
37 The structures of four compounds are shown.



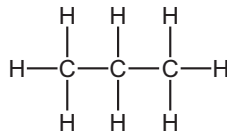
1



2



3



4

Which compounds are members of the same homologous series?

A 1, 2 and 3

B 1 and 2 only

C 1 and 4

D 2 and 4

Solution 37

Answer: **C**

Why

- Members of a homologous series share the same functional group and the same general formula.
- So identify the functional group in each structure before comparing them.
- Two alkanes belong together; an alkene or an alcohol belongs to a different series.

Question 5

0620/42 N25 ■ Q5 ■ 12 marks

5 This question is about the homologous series of alkanes.

Three general characteristics of alkanes are:

- they are generally unreactive because they do **not** have a functional group
- they show trends in their physical properties, such as melting points and boiling points
- they have similar chemical properties.

(a) Describe **two other** general characteristics of the homologous series of alkanes.

Question 5

Question 5

[2]

- (b) (i)** State the trend in the boiling points of the alkanes as the carbon chain length increases.

Question 5

- (ii) Name **one other** physical property of alkanes that shows a trend, other than melting points and boiling points.

Describe this trend as the carbon chain length of alkanes increases.

Question 5

Question 5

[2]

(c) State why alkanes are described as saturated.

Question 5

(d) Propane has the structural formula $\text{CH}_3\text{CH}_2\text{CH}_3$.

When propane undergoes a monosubstitution reaction with chlorine at room temperature, **two** organic products can be formed.

(i) State **one** condition needed for this substitution reaction to take place.

Question 5

(ii) Give the structural formula and state the name of each organic product formed.

- structural formula of product 1

Question 5

- structural formula of product 2

Question 5

- (iii) The two products formed are structural isomers of each other.

[4]

Define the term structural isomers.

Question 5

[Total: 12]

Solution 5

(a)

Mark scheme

- M1 (have a) general formula of C_nH_{2n+2} M2
- differ from one member to the next by a $-CH_2-$ unit
- 2

Solution 5

(b)(i)

Mark scheme

- increases
- 1
- 0620/42
- October/November 2025

Solution 5

(b)(ii)

Mark scheme

- M1 physical property **M2**
- change as chain length increases
- 2

Solution 5

(c)

Mark scheme

- all carbon–carbon bonds are single (bonds)
- 1

Solution 5

(d)(i)

Mark scheme

- ultraviolet light
- 1

Solution 5

(d)(ii)

Mark scheme

- M1 $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$ M3
- 1-chloropropane M2
- $\text{CH}_3\text{CHClCH}_3$ M4
- 2-chloropropane
- 4

Solution 5

(d)(iii)

Mark scheme

- (compounds with) the same molecular formula but different structural formulae or structure
- 1

Question 6

0620/42 N25 ■ Q6 ■ 8 marks

- 6 Compound **E** shown in Fig. 6.1 is an ester.

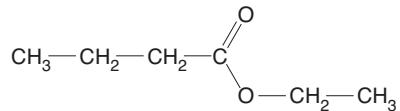


Fig. 6.1

- (a) On **Fig. 6.1**, draw a circle around all the atoms which make up the ester linkage. [1]
- (b) Name compound **E**.

Question 6

(c) Deduce the empirical formula of compound **E**.

Question 6

- (d) Compound **E** is produced when two different compounds react together in the presence of a catalyst.
- (i) Name the **two** compounds that react together to produce compound **E**.

Question 6

Question 6

[2]

- (ii) Suggest a suitable catalyst for this reaction.

Question 6

- (e) Determine the number of unbranched esters which have the molecular formula $\text{C}_5\text{H}_{10}\text{O}_2$.

Question 6

- (f) All unbranched esters with the molecular formula $\text{C}_5\text{H}_{10}\text{O}_2$ combust completely to form carbon dioxide and water only.

Write the symbol equation for the complete combustion of $\text{C}_5\text{H}_{10}\text{O}_2$.

Question 6

IV	V	VI	VII	VIII
				2 He helium 4
6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20
14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35.5	18 Ar argon 40
32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84
50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131
82 Pb lead 207	83 Bi bismuth 209	84 Po polonium —	85 At astatine —	86 Rn radon —
114 Fl flerovium —	115 Mc moscovium —	116 Lv livermorium —	117 Ts tennessine —	118 Og oganeson —

68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175
100 Fm fermium —	101 Md mendelevium —	102 No nobelium —	103 Lr lawrencium —

[Total: 8]

Question 6

| | | | | | | | | | | | | | | |

Question 6

The Periodic Table of Elements

Group																	
III																	
1 H hydrogen 1																	
5 B boron 11																	
13 Al aluminium 27																	
31 Ga gallium 70	30 Zn zinc 65	29 Cu copper 64	28 Ni nickel 59	27 Co cobalt 59	26 Fe iron 56	25 Mn manganese 55	24 Cr chromium 52	23 V vanadium 51	22 Ti titanium 48	21 Sc scandium 45	20 Ca calcium 40	19 K potassium 39	18 Ar argon 36	17 Cl chlorine 35	16 S sulfur 32	15 P phosphorus 31	14 Si silicon 28
49 In indium 115	48 Cd cadmium 112	47 Ag silver 108	46 Pd palladium 106	45 Rh rhodium 103	44 Ru ruthenium 101	43 Tc technetium 98	42 Zr zirconium 90	41 Nb niobium 93	40 Hf hafnium 178	39 Y yttrium 89	38 Sr strontium 88	37 Rb rubidium 85	36 Kr krypton 84	35 Br bromine 80	34 Se selenium 79	33 As arsenic 75	32 Ge germanium 73
81 Tl thallium 204	80 Hg mercury 201	79 Au gold 197	78 Pt platinum 195	77 Ir iridium 192	76 Os osmium 190	75 Re rhenium 187	74 Mo molybdenum 96	73 Ta tantalum 181	72 Hf hafnium 178	71 Zr zirconium 90	70 Yb ytterbium 173	69 Tm thulium 169	68 Er erbium 167	67 Ho holmium 165	66 Dy dysprosium 163	65 Tb terbium 159	64 Gd gadolinium 157
113 Nh nihonium —	112 Cn copernicium —	111 Rg roentgenium —	110 Ds darmstadtium —	109 Mt meitnerium —	108 Hs hassium —	107 Bh bohrium —	106 Sg seaborgium —	105 Db dubnium —	104 Rf rutherfordium —	103 Lr lawrencium —	102 No nobelium —	101 Md mendelevium —	100 Fm fermium —	99 Es einsteinium —	98 Cf californium —	97 Bk berkelium —	96 Cm curium —
67 Ho holmium 165	66 Dy dysprosium 163	65 Tb terbium 159	64 Gd gadolinium 157	63 Eu europium 152	62 Sm samarium 150	61 Pm promethium 145	60 Nd neodymium 144	59 Pr praseodymium 141	58 Ce cerium 140	57 La lanthanum 139	56 Ba barium 137	55 Cs cesium 133	54 Xe xenon 131	53 I iodine 127	52 Te tellurium 128	51 Sb antimony 122	50 Sn tin 119

ature and pressure (r.t.p.).

Question 6

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Question 6

II	

Key

	4 Be beryllium 9	atomic number atomic symbol name relative atomic mass					
	12 Mg magnesium 24						
um	20 Ca calcium 40	21 Sc scandium 45	22 Ti titanium 48	23 V vanadium 51	24 Cr chromium 52	25 Mn mangan 55	
im	38 Sr strontium 88	39 Y yttrium 89	40 Zr zirconium 91	41 Nb niobium 93	42 Mo molybdenum 96	43 Tc technet –	
m	56 Ba barium 137	57–71 lanthanoids	72 Hf hafnium 178	73 Ta tantalum 181	74 W tungsten 184	75 Re rheni 186	
m	88 Ra radium –	89–103 actinoids	104 Rf rutherfordium –	105 Db dubnium –	106 Sg seaborgium –	107 Bh bohri –	

anoids	57 La lanthanum 139	58 Ce cerium 140	59 Pr praseodymium 141	60 Nd neodymium 144	61 Pm prometh –
oids	89 Ac actinium –	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptuni –

volume of one mole of any gas is 24 dm³ at room tempe

Question 6

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Question 6

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1
—
8
F
fran
—

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The

Solution 6

(a)

Mark scheme

- correctly circled ester link (including 2 C atoms and 2 O atoms)
- 1

Solution 6

(b)

Mark scheme

- ethyl butanoate
- 1

Solution 6

(c)

Mark scheme

- $\text{C}_3\text{H}_6\text{O}$
- 1

Solution 6

(d)(i)

Mark scheme

- M1 butanoic acid **M2**
- ethanol
- 2

Solution 6

(d)(ii)

Mark scheme

- acid
- 1

Solution 6

(e)

Mark scheme

- 4
- 1

Solution 6

(f)

Mark scheme

- $2\text{C}_5\text{H}_{10}\text{O}_2 + 13\text{O}_2 \rightarrow 10\text{CO}_2 + 10\text{H}_2\text{O}$
- 1
- 0620/42
- October/November 2025

Question 6

0620/43 N25 ■ Q6 ■ 17 marks

6 This question is about organic compounds.

(a) Organic compound **Q** has the following composition by mass.

C, 50.00%; H, 5.56%; O, 44.44%

Calculate the empirical formula of compound **Q**.

Question 6

Question 6

- (b) Organic compound **R** has the empirical formula CHO and a relative molecular mass of 116.
Determine the molecular formula of compound **R**.

Question 6

(c) Carboxylic acids react with alcohols to form esters.

(i) Name the other product that is formed when a carboxylic acid reacts with an alcohol.

Question 6

(ii) Name the **type** of catalyst that is used when a carboxylic acid reacts with an alcohol.

Question 6

(iii) Ester **S** has the structural formula $\text{CH}_3\text{CH}_2\text{COOCH}_2\text{CH}_2\text{CH}_2\text{CH}_3$.

Name the carboxylic acid and the alcohol which react together to form ester **S**.

Question 6

Question 6

[2]

(d) Fig. 6.1 shows part of a polymer structure.

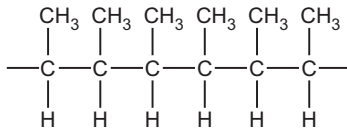


Fig. 6.1

(i) Name the type of polymerisation that is used to produce this polymer.

Question 6

- (ii) Suggest why it is **not** possible to write the molecular formula of this polymer.

Question 6

- (iii) State the number of monomer units that are needed to make the part of the polymer structure shown in Fig. 6.1.

Question 6

(iv) Draw the displayed formula of the monomer used to make this polymer.

Question 6

[2]

- (e) Fig. 6.2 shows part of the general structure of an amino acid.

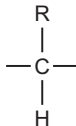


Fig. 6.2

- (i) Complete Fig. 6.2 to show all the atoms and all the bonds in the two functional groups of the amino acid. [2]
- (ii) Part of a natural polyamide structure is shown in Fig. 6.3.

Question 6

H

U

H

U

Question 6

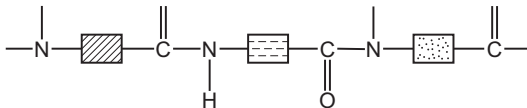


Fig. 6.3

On Fig. 6.3, draw a circle around **one** amide linkage.

[1]

(iii) State the name given to natural polyamides made from amino acids.

Question 6

					IV	V	VI	VII	VIII
					2 He helium 4				
	6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20				
	14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35,5	18 Ar argon 40				
	32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84				
	50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131				
	82 Pb lead 207	83 Bi bismuth 209	84 Po polonium —	85 At astatine —	86 Rn radon —				
	114 Fl flerovium —	115 Mc moscovium —	116 Lv livermorium —	117 Ts tennessine —	118 Og oganeson —				

	68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175
	100 Fm fermium —	101 Md mendelevium —	102 No nobelium —	103 Lr lawrencium —

[Total: 17]

Question 6

The Periodic Table of Elements

Group										III
1 H hydrogen 1										
										5 B boron 11
										13 Al aluminium 27
										31 Ga gallium 70
										30 Zn zinc 65
										29 Cu copper 64
										28 Ni nickel 59
										27 Co cobalt 59
										26 Fe iron 56
										44 Ru ruthenium 101
										45 Rh rhodium 103
										46 Pd palladium 106
										47 Ag silver 108
										48 Cd cadmium 112
										49 In indium 115
										76 Os osmium 190
										77 Ir iridium 192
										78 Pt platinum 195
										79 Au gold 197
										80 Hg mercury 201
										81 Tl thallium 204
										108 Hs hassium —
										109 Mt meitnerium —
										110 Ds darmstadtium —
										111 Rg roentgenium —
										112 Cn copernicium —
										113 Nh nihonium —
										67 Ho holmium 165
										66 Dy dysprosium 163
										65 Tb terbium 159
										64 Gd gadolinium 157
										63 Eu europium 152
										94 Pu plutonium —
										95 Am americium —
										96 Cm curium —
										97 Bk berkelium —
										98 Cf californium —
										99 Es einsteinium —

rature and pressure (r.t.p.).

Question 6

[illegible]

		Key											
		atomic number atomic symbol name relative atomic mass											
3	Li lithium 7	4	Be beryllium 9										
11	Na sodium 23	12	Mg magnesium 24										
19	K potassium 39	20	Ca calcium 40	21	Sc scandium 45	22	Ti titanium 48	23	V vanadium 51	24	Cr chromium 52	25	Mn manganese 55
37	Rb rubidium 85	38	Sr strontium 88	39	Y yttrium 89	40	Zr zirconium 91	41	Nb niobium 93	42	Mo molybdenum 96	43	Tc technetium 98
55	Cs cesium 133	56	Ba barium 137	57–71	lanthanoids	72	Hf hafnium 178	73	Ta tantalum 181	74	W tungsten 184	75	Re rhenium 186
87	Fr francium 223	88	Ra radium 226	89–103	actinoids	104	Rf rutherfordium 261	105	Ds dubnium 261	106	Sg seaborgium 266	107	Bh bohrium 264

lanthanoids

57	La lanthanum 139	58	Ce cerium 140	59	Pr praseodymium 141	60	Nd neodymium 144	61	Pm promethium —
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actinoids

89	Ac actinium —	90	Th thorium 232	91	Pa protactinium 231	92	U uranium 238	93	Np neptunium —
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volume of one mole of any gas is 24 dm^3 at room temperature.

Question 6

—
—
—

— L lith — 1
N soc — 2
— 1
P pota: — 3
R rubi — 8
— 5
C cae — 1
— 8
F fran —

ant

acti

The

Solution 6

(a) Mark scheme

- M1 C $50(.00) \div 12$
- H $5.56 \div 1$
- O $44.44 \div 16$
- OR
- $4.17:5.56:2.78$ (M2)
- fractions shown dividing all by smallest
- OR
- $1.5:2:1$

Solution 6

- OR
- 3:4:2 (M3)
- $\text{C}_3\text{H}_4\text{O}_2$
- 3

Solution 6

(b)

Mark scheme

- $\text{C}_4\text{H}_4\text{O}_4$
- 1

Solution 6

(c)(i)

Mark scheme

- water
- 1

(c)(ii)

Mark scheme

- acid
- 1

Solution 6

(c)(iii)

Mark scheme

- M1 propanoic acid M2
- butan-1-ol
- 2

Solution 6

(d)(i)

Mark scheme

- addition
- 1

(d)(ii)

Mark scheme

- polymers are of indefinite length
- 1

Solution 6

(d)(iii)

Mark scheme

- 3 / three
- 1
- 0620/43
- October/November 2025

Solution 6

(d)(iv)

Mark scheme

- M1 $C = C$ (M2)
- displayed formula of but-2-ene
- OR
- 2

Solution 6

(e)(i)

Mark scheme

- M1 -NH_2 displayed **M2**
- -COOH displayed
- functional groups can be on either side
- 2

Solution 6

(e)(ii)

Mark scheme

- one circle around either amide linkage
- 1

(e)(iii)

Mark scheme

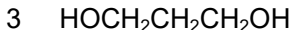
- proteins
- 1

Question 33

0620/21 J25 ■ Q33 ■ 1 mark

33 The structural formula of methyl ethanoate is $\text{CH}_3\text{COOCH}_3$.

Which compounds are structural isomers of methyl ethanoate?



A 1, 2 and 3

B 1 and 2 only

C 2 and 3 only

D 3 only

Solution 33

Answer: **B**

Why

- Methyl ethanoate is $\text{C}_3\text{H}_6\text{O}_2$, and a structural isomer must have exactly that formula.
- Ethyl methanoate and propanoic acid are both $\text{C}_3\text{H}_6\text{O}_2$, so both qualify.
- Propane-1,3-diol is $\text{C}_3\text{H}_8\text{O}_2$ – two hydrogens too many, so it is not an isomer.

Question 34

0620/23 J25 ■ Q34 ■ 1 mark

34 Which row describes two characteristics of members of the same homologous series?

	characteristic 1	characteristic 2
A	same functional group	trend in physical properties
B	same physical properties	same functional group
C	same general formula	different chemical properties
D	differing from one member to the next by a CH_3 unit	similar chemical properties

Solution 34

Answer: **A**

Why

- Members of a homologous series share the same functional group and the same general formula.
- Their physical properties change gradually along the series as the chain lengthens.
- So their physical properties are *not* the same – only the trend is shared.

Question 6

0620/42 M25 ■ Q6 ■ 14 marks

6 The structural formulae of two compounds, **A** and **B**, are shown.

A	B
$\text{CH}_2=\text{CHCH}_3$	$\text{CH}_3\text{CH}=\text{CHCH}_3$

A and **B** are members of the same homologous series.

(a) Give **two** reasons why the structural formulae of **A** and **B** show they are members of the same homologous series.

Question 6

Question 6

[2]

(b) Explain why **A** and **B** are both hydrocarbons.

Question 6

(c) Write the symbol equation for the complete combustion of **A**.

Question 6

(d) Deduce the empirical formula of **A**.

Question 6

(e) Name compound **B**.

Question 6

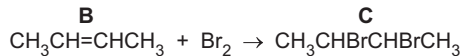
- (f) A structural isomer of **B** is a member of the same homologous series.

Draw the displayed formula of this structural isomer of **B**.

Question 6

[1]

- (g) Compound **B** reacts with aqueous bromine at room temperature to form product **C**.
The equation is shown.



- (i) State why this is an addition reaction.

Question 6

- (ii) Describe the colour change in aqueous bromine during this reaction.

Question 6

(iii) Name product **C**.

Question 6

- (h) Under certain conditions, **one** mole of **B** reacts with oxygen to form **two** moles of carboxylic acid **D**.

Carboxylic acid **D** has **two** carbon atoms.

- (i) Draw the displayed formula of carboxylic acid **D**.

Question 6

[1]

(ii) Name carboxylic acid **D**.

Question 6

(iii) Complete the symbol equation for this reaction.

Question 6

IV	V	VI	VII	VIII
				2 He helium 4
6 C carbon 12	7 N nitrogen 14	8 O oxygen 16	9 F fluorine 19	10 Ne neon 20
14 Si silicon 28	15 P phosphorus 31	16 S sulfur 32	17 Cl chlorine 35.5	18 Ar argon 40
32 Ge germanium 73	33 As arsenic 75	34 Se selenium 79	35 Br bromine 80	36 Kr krypton 84
50 Sn tin 119	51 Sb antimony 122	52 Te tellurium 128	53 I iodine 127	54 Xe xenon 131
82 Pb lead 207	83 Bi bismuth 209	84 Po polonium —	85 At astatine —	86 Rn radon —
114 Fl flerovium —	115 Mc moscovium —	116 Lv livermorium —	117 Ts tennessine —	118 Og oganeson —

68 Er erbium 167	69 Tm thulium 169	70 Yb ytterbium 173	71 Lu lutetium 175
100 Fm fermium —	101 Md mandeleevium —	102 No nobelium —	103 Lr lawrencium —

[1]

[Total: 14]

Question 6

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Question 6

The Periodic Table of Elements

Group									
1									III
H hydrogen 1									
26 Fe iron 56	27 Co cobalt 59	28 Ni nickel 59	29 Cu copper 64	30 Zn zinc 65	31 Ga gallium 70				
44 Ru ruthenium 101	45 Rh rhodium 103	46 Pd palladium 106	47 Ag silver 108	48 Cd cadmium 112	49 In indium 115				
76 Os osmium 190	77 Ir iridium 192	78 Pt platinum 195	79 Au gold 197	80 Hg mercury 201	81 Tl thallium 204				
108 Hs hassium —	109 Mt meitnerium —	110 Ds darmstadtium —	111 Rg roentgenium —	112 Cn copernicium —	113 Nh nihonium —				
62 Sm samarium 150	63 Eu europium 152	64 Gd gadolinium 157	65 Tb terbium 159	66 Dy dysprosium 163	67 Ho holmium 165				
94 Pu plutonium —	95 Am americium —	96 Cm curium —	97 Bk berkelium —	98 Cf californium —	99 Es einsteinium —				

re and pressure (r.t.p.).

Question 6

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Question 6

II	

Key

atomic number atomic symbol name relative atomic mass						
4 Be beryllium 9						
12 Mg magnesium 24						
20 Ca calcium 40	21 Sc scandium 45	22 Ti titanium 48	23 V vanadium 51	24 Cr chromium 52	25 Mn manganese 55	
38 Sr strontium 88	39 Y yttrium 89	40 Zr zirconium 91	41 Nb niobium 93	42 Mo molybdenum 96	43 Tc technetium —	
56 Ba barium 137	57–71 lanthanoids	72 Hf hafnium 178	73 Ta tantalum 181	74 W tungsten 184	75 Re rhenium 186	
88 Ra radium —	89–103 actinoids	104 Rf rutherfordium —	105 Db dubnium —	106 Sg seaborgium —	107 Bh bohrium —	

57 La lanthanum 139	58 Ce cerium 140	59 Pr praseodymium 141	60 Nd neodymium 144	61 Pm promethium –
89 Ac actinium –	90 Th thorium 232	91 Pa protactinium 231	92 U uranium 238	93 Np neptunium –

Volume of one mole of any gas is 24 dm³ at room temperature

Question 6

Question 6

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I
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3	Li	lithium	7
11	Na	sodium	23
19	K	potassium	39
37	Rb	rubidium	85
55	Cs	caesium	133
87	Fr	francium	—

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Solution 6

(a)

Mark scheme

- M1 (have a) general formula of C_nH_{2n} M2
- (have a) $C=C$ functional group
- 2

Solution 6

(b)

Mark scheme

- compounds made of C and H only
- 1

Solution 6

(c)

Mark scheme

- $2\text{C}_3\text{H}_6 + 9\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$ (M1)
- $\text{CO}_2 + \text{H}_2\text{O}$ as only products (M2)
- correct equation
- 2

Solution 6

(d)

Mark scheme

- CH₂
- 1

Solution 6

(e)

Mark scheme

- but-2-ene
- 1

Solution 6

(f)

Mark scheme

- displayed formula of but-1-ene
- 1

Solution 6

(g)(i)

Mark scheme

- only one product is formed
- 1

(g)(ii)

Mark scheme

- orange to colourless
- 1

Solution 6

(g)(iii)

Mark scheme

- 2,3-dibromobutane
- 1

Solution 6

(h)(i)

Mark scheme

- displayed formula of ethanoic acid
- 1
- 0620/42
- February/March 2025

Solution 6

(h)(ii)

Mark scheme

- ethanoic acid
- 1

(h)(iii)

Mark scheme

- $\text{CH}_3\text{CH}=\text{CHCH}_3 + 2\text{O}_2 \rightarrow 2\text{CH}_3\text{COOH}$
- 1