National Qualifications 2017

X713/75/02

Chemistry
Section 1 — Questions

MONDAY, 8 MAY

1:00 PM – 3:00 PM

Instructions for the completion of Section 1 are given on *Page 02* of your question and answer booklet X713/75/01.

Record your answers on the answer grid on *Page 03* of your question and answer booklet.

You may refer to the Chemistry Data Booklet for National 5.

Before leaving the examination room you must give your question and answer booklet to the Invigilator; if you do not, you may lose all the marks for this paper.

SECTION 1

1. In a reaction, the mass lost in 30 seconds was 2 g.

What is the average rate of reaction, in $g\,s^{-1}$, over this time?

A $\frac{1}{30}$

B $\frac{30}{2}$

C $\frac{1}{2}$

D $\frac{2}{30}$

2. An atom has 21 protons, 21 electrons and 24 neutrons.

The atom has

A atomic number 24 and mass number 42

B atomic number 45 and mass number 21

C atomic number 21 and mass number 45

D atomic number 24 and mass number 45.

3. What is the charge on the zinc ion in zinc dichromate, $ZnCr_2O_7$?

You may wish to use the data booklet to help you.

A 2+

B 2–

C 1+

D 1–

4. The table contains information about magnesium and magnesium chloride.

	Melting Point (°C)	*Density* ($g\,cm^{-3}$)
Magnesium	650	1·74
Magnesium chloride	714	2·32

When molten magnesium chloride is electrolysed at 730 °C the magnesium appears as a

A solid on the surface of the molten magnesium chloride

B solid at the bottom of the molten magnesium chloride

C liquid at the bottom of the molten magnesium chloride

D liquid on the surface of the molten magnesium chloride.

5. Which of the following compounds is a base?

A Sodium carbonate
B Sodium chloride
C Sodium nitrate
D Sodium sulfate

6. $AgNO_3(aq) + KCl(aq) \longrightarrow AgCl(s) + KNO_3(aq)$
Which of the following are the spectator ions in this reaction?

A Ag^+ and Cl^-
B K^+ and NO_3^-
C Ag^+ and NO_3^-
D K^+ and Cl^-

7. $x\ H_2O_2 \longrightarrow y\ H_2O + z\ O_2$
This equation will be balanced when

A $\mathbf{x} = 1$, $\mathbf{y} = 2$ and $\mathbf{z} = 2$
B $\mathbf{x} = 1$, $\mathbf{y} = 1$ and $\mathbf{z} = 2$
C $\mathbf{x} = 2$, $\mathbf{y} = 2$ and $\mathbf{z} = 1$
D $\mathbf{x} = 2$, $\mathbf{y} = 2$ and $\mathbf{z} = 2$.

8. 0·25 moles of a gas has a mass of 7 g.
Which of the following could be the molecular formula for the gas?

A C_2H_6
B C_2H_4
C C_3H_8
D C_3H_6

9. Which of the following solutions contains the **least** number of moles of solute?

A 100 cm^3 of 0·4 mol l^{-1} solution
B 200 cm^3 of 0·3 mol l^{-1} solution
C 300 cm^3 of 1·0 mol l^{-1} solution
D 400 cm^3 of 0·5 mol l^{-1} solution

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10. Which of the following could be the molecular formula for an alkane?

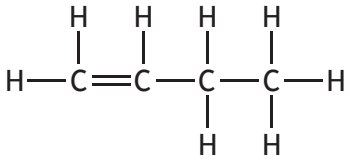
A C_7H_{16}

B C_7H_{14}

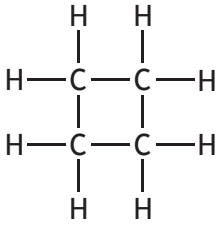
C C_7H_{12}

D C_7H_{10}

11. A student added bromine solution to compound **X** and compound **Y**.



Compound **X**



Compound **Y**

Which line in the table is correct?

	Decolourises bromine solution immediately	
	Compound **X**	Compound **Y**
A	no	no
B	no	yes
C	yes	yes
D	yes	no

12. A compound burns in air. The only products of the reaction are carbon dioxide, sulfur dioxide and water.

The compound **must** contain

A carbon and sulfur only

B carbon and hydrogen only

C carbon, hydrogen and sulfur

D carbon, hydrogen, sulfur and oxygen.

13. Vinegar is a solution of

A ethanol

B methanol

C ethanoic acid

D methanoic acid.

14. A reaction is exothermic if

A energy is absorbed from the surroundings

B energy is released to the surroundings

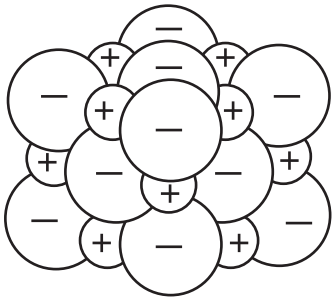
C energy is required to start the reaction

D there is no energy change.

15. Which of the following diagrams could be used to represent the structure of copper?

A

B



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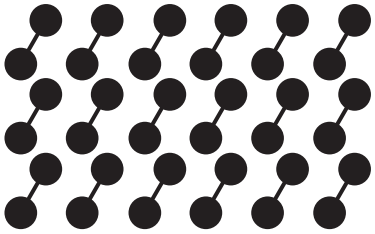

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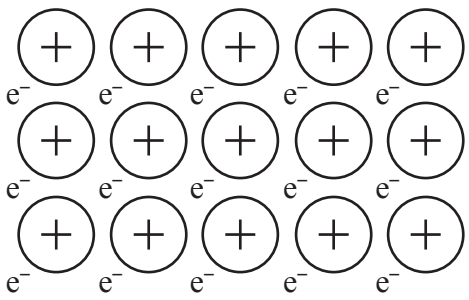

16. Which of the following metals is found uncombined in the Earth's crust?
You may wish to use the data booklet to help you.

A Tin
B Magnesium
C Gold
D Sodium

17. Which of the following is **not** an essential element for healthy plant growth?

A Oxygen
B Nitrogen
C Potassium
D Phosphorus

18. The Haber process is the industrial process for the manufacture of

A nitric acid
B ammonia
C alkenes
D esters.

19. Which of the following salts can be prepared by a precipitation reaction?
You may wish to use the data booklet to help you.

A Barium sulfate
B Lithium nitrate
C Calcium chloride
D Ammonium phosphate

20. A solution of accurately known concentration is more commonly known as a

A correct solution
B precise solution
C standard solution
D prepared solution.

[END OF SECTION 1. NOW ATTEMPT THE QUESTIONS IN SECTION 2 OF YOUR QUESTION AND ANSWER BOOKLET]

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