

GCSE to A-Level Chemistry

Transition Workbook

Name: _____

Instructions:

1. Please use your knowledge and Kerboodle GCSE OCR Chemistry book to answer the multiple choice questions below.

2. You will need a pen, paper and calculator.

3. This transition booklet has to be handed in to your Chemistry teacher during your first chemistry lesson.

4. Print the A-Level Specification

<https://www.ocr.org.uk/images/171720-specification-accredited-a-level-gce-chemistry-a-h432.pdf>

5. Print the data booklet which must be brought in to every lesson.

<https://www.ocr.org.uk/Images/643856-data-booklet.pdf>

1. The atomic number of fluorine

- A. 9
- B. 19
- C. 10
- D. 28

Your answer

[1]

2. The formula for magnesium nitrate

- A. MgN
- B. Mg₂NO₃
- C. Mg(NO₃)₂
- D. Mg₂(NO₃)₂

Your answer

[1]

3. The balanced symbol equation for aluminium reacting with oxygen.

- A. Al + O -> AlO
- B. Al₂ + O₃ -> Al₂O₃
- C. Al + O₂ -> AlO₂
- D. 2Al + 3O₂ -> Al₂O₃

Your answer

[1]

4. A chemist determines some properties of two substances, **C** and **D**.

The results are shown in the table.

	C	D
Melting point / °C	660	801
Electrical conductivity when solid	Yes	No
Electrical conductivity when molten	Yes	Yes
Solubility in water	No	Yes

Which row correctly identifies the bonding and structure in **C** and **D**?

	C	D
A	giant ionic	giant metallic
B	giant ionic	giant ionic
C	giant metallic	giant metallic
D	giant metallic	giant ionic

Your answer

[1]

5. Which compound has the highest boiling point?

- A. chlorine
- B. ammonia
- C. sodium chloride
- D. water

Your answer

[1]

6. Explain why sodium chloride only conducts electricity when molten or dissolved in water.

- A. Mobile ions
- B. Delocalised electrons
- C. Charge carriers move through the structure
- D. Fixed ions

Your answer

[1]

7. Which particles are attracted in metallic bonding?

- A. anions and delocalised electrons
- B. cations and delocalised electrons
- C. oppositely charged ions
- D. protons and electrons

Your answer

[1]

8. Which mass of substance contains the greatest number of atoms?

- A. 3.00 g of ammonia, NH_3
- B. 3.00 g of chloromethane, CHCl_3
- C. 4.00 g of hydrogen sulfide, H_2S
- D. 4.00 g of hydrogen chloride, HCl

Your answer

[1]

9. A hydrocarbon contains 85.71% carbon by mass.

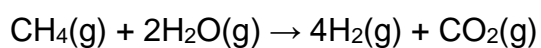
What is the empirical formula of the hydrocarbon?

- A CH
- B CH₂
- C CH₄
- D C₂H₄

Your
answer

[1]

10. Hydrogen can be prepared industrially by the reaction of methane with steam.
The equation is shown below.



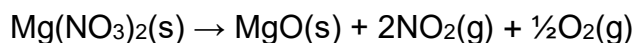
What is the atom economy of hydrogen for this process?

- A 3.8%
- B 4.3%
- C 15.4%
- D 17.4%

Your
answer

[1]

11. Magnesium nitrate, $\text{Mg}(\text{NO}_3)_2$, decomposes when heated:



0.00250 mol of $\text{Mg}(\text{NO}_3)_2$ is decomposed.

What is the volume of gas produced, measured at RTP?

- A 30 cm^3
- B 60 cm^3
- C 120 cm^3
- D 150 cm^3

Your answer

[1]

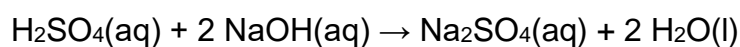
12. If moles (n) = concentration (c) x volume (v), how do you rearrange the equation for c .

- 1. n/v
- 2. $n \times v$
- 3. v/n
- 4. m/v

Your answer

[1]

13. 25.0 cm^3 of a solution of sodium hydroxide solution required 21.5 cm^3 of 0.100 mol/dm^3 sulfuric acid for neutralisation.



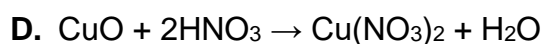
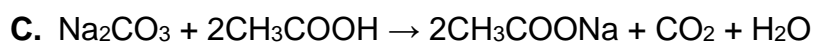
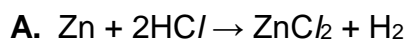
Find the concentration of the sodium hydroxide solution in mol/dm^3 . Give your answer to 3 significant figures

- A 0.043 mol/dm^3
- B 0.086 mol/dm^3
- C 0.058 mol/dm^3
- D 0.172 mol/dm^3

Your answer

[1]

14. Which equation does **not** represent a neutralisation reaction?



Your answer

[1]

15. Which statement about the periodic table is not correct?

A. The elements are arranged in groups with similar chemical properties.

B. The elements are arranged in periods with repeating trends in properties

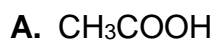
C. The elements are arranged in order of increasing atomic number.

D. The elements in the halogen group increase in reactivity down the group.

Your answer

[1]

16. Which compound is an alkali?



Your answer

[1]

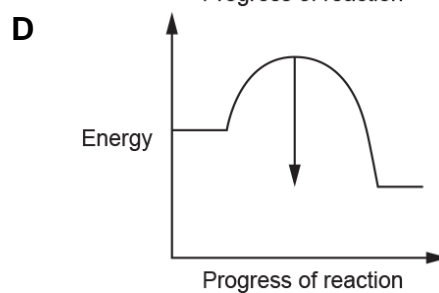
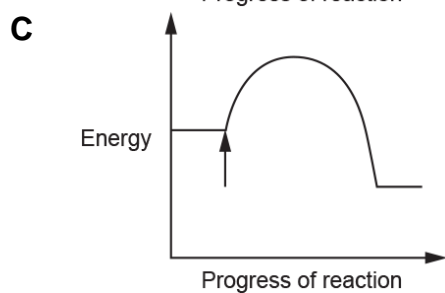
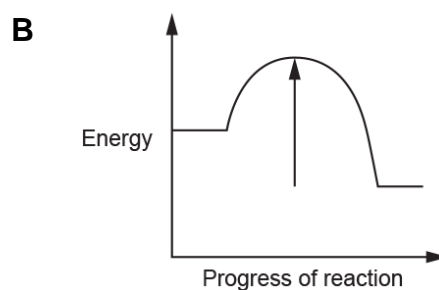
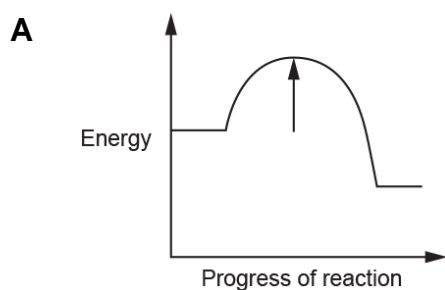
17. What is meant by the **activation energy** in a chemical reaction?

- A The total energy used up when a reaction has stopped.
- B The energy absorbed during a reaction.
- C The energy released during a reaction.
- D The minimum energy needed for a reaction to occur.

Your answer

[1]

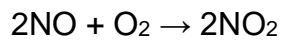
18. Which reaction profile has an arrow showing the **activation energy**?



Your answer

[1]

19. Nitrogen monoxide, NO, can be oxidised to form nitrogen dioxide, NO₂.



What is the oxidising agent in this reaction?

- A Nitrogen
- B Nitrogen dioxide
- C Nitrogen monoxide
- D Oxygen

Your answer

[1]

20. Which test identifies sulfate ions?

- A A flame test
- B Adding a few drops of barium chloride solution
- C Adding a few drops of silver nitrate solution
- D Adding a few drops of sodium hydroxide solution

Your answer

[1]

21. What is the test for halide ions?

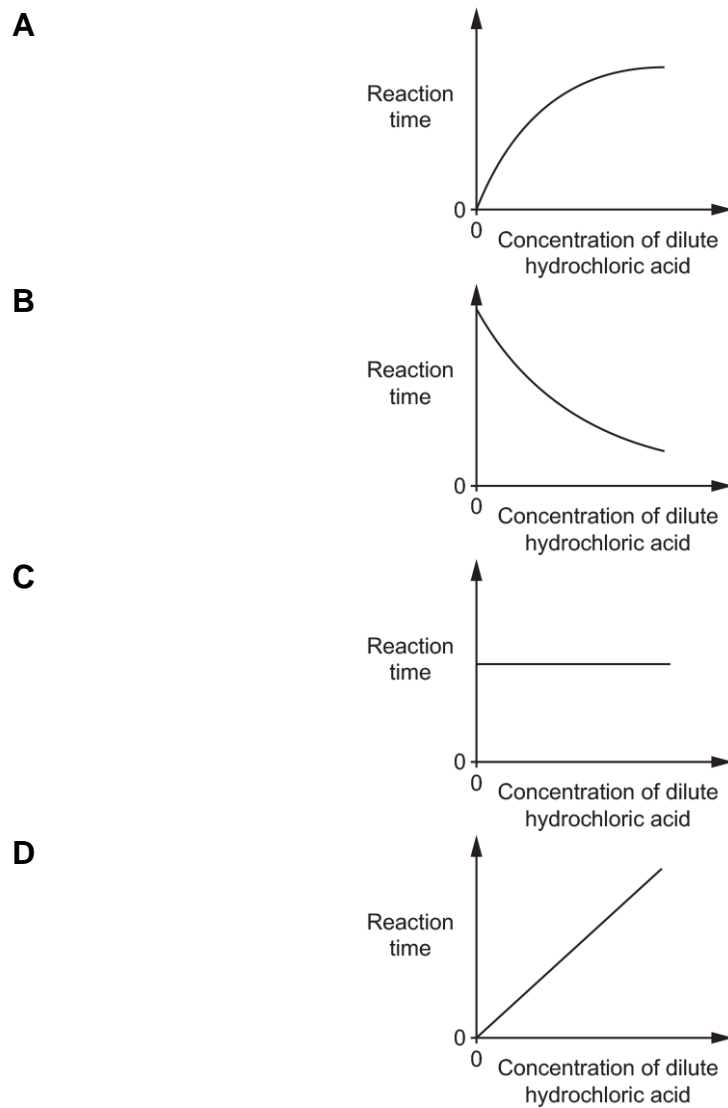
- A Add a few drops of dilute nitric acid then a few drops of silver nitrate solution.
- B Add a few drops of hydrochloric acid then a few drops of barium chloride solution.
- C Add a few drops of hydrochloric acid then a few drops of silver nitrate solution.
- D Add a few drops of sodium hydroxide solution.

Your answer

[1]

22. A student investigates the reaction between magnesium and dilute hydrochloric acid.

Which graph shows the effect of the **concentration** of the dilute hydrochloric acid on the reaction time?



Your answer

[1]

23. Explain why a catalyst is used in a chemical reaction

- A Gives particles more kinetic energy.
- B Concentration of products increase.
- C Lowers the activation energy.
- D Particles move around faster.

Your answer

[1]

24. Which statement describes what happens when a reaction **reaches** equilibrium?

- A The forward reaction happens at a faster rate than the backwards reaction.
- B The forward and backward reactions happen at the same rate.
- C The forward and backward reactions stop happening.
- D The backward reaction happens at a faster rate than the forward reaction.

Your answer

[1]

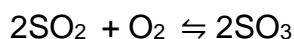
25. When the temperature of an endothermic reaction at equilibrium is decreased, the equilibrium will shift in the direction that:

- A. Absorbs more heat.
- B. Releases more heat.
- C. Increases the concentration of reactants.
- D. Decreases the concentration of products.

Your answer

[1]

26. The Contact process produces sulfur trioxide, SO₃, in an **exothermic** reaction.



The temperature in the reaction vessel is usually 450 °C.

What happens as the temperature is increased to 600 °C?

- A** Higher rate of reaction and increased yield of sulfur trioxide.
- B** Higher rate of reaction and decreased yield of sulfur trioxide.
- C** Higher rate of reaction and no change in yield of sulfur trioxide.
- D** Lower rate of reaction and decreased yield of sulfur trioxide.

Your answer

[1]

27. If a catalyst is added to a reaction at equilibrium, what effect does it have on the equilibrium position?

- A.** It shifts the equilibrium to the left.
- B.** It shifts the equilibrium to the right.
- C.** It has no effect on the equilibrium position.
- D.** It decreases the rate of the forward reaction.

Your answer

[1]

28. Alkenes are unsaturated hydrocarbons because they contain:

- A.** Single bonds between the carbon atoms
- B.** Double bond between the carbon atoms
- C.** Triple bonds between the carbon atoms
- D.** Both single and double bonds between carbon and hydrogen

Your answer

[1]

29. Which piece of apparatus would be most suitable for accurately measuring 25.0 cm³ of a solution?

- A. Beaker
- B. Measuring cylinder
- C. Burette
- D. Pipette

Your answer

[1]

30. How many significant figures are in the number 0.00725?

- A. 2
- B. 3
- C. 4
- D. 5

END OF QUESTIONS