BALLYMENA ACADEMY CHEMISTRY DEPARTMENT

Year 10 Chemistry
Revision Checklist (May 2024)

Your Year 10 Chemistry examination will be 60 minutes long and will cover the following:

1. **Metals and Reactivity** (Topic 1) including the symbols/names of common elements.
2. **Periodic Table** (Topic 2) including process data from tables, graphs and bar charts
3. **Atomic Structure** (Topic 4)
4. **Chemical symbols and simple formulae** (Careers topic is not being assessed)

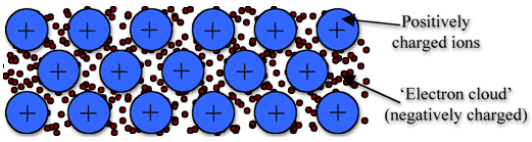
Bring the following with you to the examination:

- 2 pens
- Pencil, rubber and sharpener
- 30 cm ruler
- Calculator may be used

Be able to draw sectional diagrams including labels

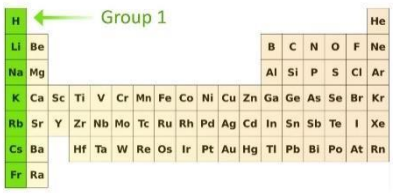
Note: You are **not** permitted to take the Data Leaflet/Periodic Table into this examination.

1. Metals and Reactivity

Learning Outcome/Objective	Notes to help with learning/revision
1. Show the position of metals in the Periodic Table.	Metals – left hand side of the 'staircase line', but remember that hydrogen is NOT a metal
2. Know the symbols for common elements in the periodic table.	You learned this as a homework – see the end of this revision checklist. Remember if an element has a two letter symbol the first letter is upper case and the second letter is lower case, e.g. "NA", "nA", "na" are all **wrong** – it should be "**Na**".
3. Recall five physical properties of metals and explain how its physical properties relate to its structure. 	See page 2 for the properties and page 3 for the structure of a metal. Explanation examples: • **High melting point (solid at room temperature)** – strong metallic bond needs large amount of energy to break bond because there is a strong attraction between positive metal ions and 'sea of electrons' • **Density** – metals have a high density because the metal atoms are packed closely together and have a lot of mass (are heavy)
4. Set up an electrical circuit correctly to prove that a metal conducts electricity.	See page 3
5. Burn magnesium safely, describe what is seen when calcium and magnesium are burned in air and write word equations for these reactions.	See page 4 - remember the general idea that: metal + oxygen → metal oxide e.g. calcium + oxygen → calcium oxide What do you see while the reaction occurs? What colour and state (solid, liquid, gas) is the product in each reaction?
6. Explain that the difference in reactivity between metals can be studied using their reactions with water and dilute acids.	See page 5 – 7 and look at the next learning outcomes (5 – 9) in detail. What do you see when the metal is cut? What do you observe when the metal is placed in water?
7. Recall observations and write word equations for the reactions of sodium, potassium and calcium with water.	See pages 5 – 7 and remember the general equation is: reactive metal + water → metal hydroxide + hydrogen e.g. calcium + water → calcium hydroxide + hydrogen
8. Explain the meaning of the term 'exothermic'.	Exothermic = gives out heat
9. Recall the products of the reactions between hydrochloric acid and the metals magnesium, zinc, aluminium, copper and iron.	See pages 6 – 7 and remember the general equation is: • reactive metal + hydrochloric acid → metal chloride + hydrogen e.g. zinc + hydrochloric acid → zinc chloride + hydrogen Note: **Copper** is unreactive and therefore doesn't react with dilute acid

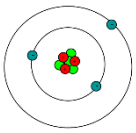
Learning Outcome/Objective	Notes to help with learning/revision
10. Write word equations for these metals with hydrochloric acid, sulfuric acid and nitric acid.	See page 7 and remember the general equations: • reactive metal + hydrochloric acid → metal chloride + hydrogen • reactive metal + sulfuric acid → metal sulfate + hydrogen • reactive metal + nitric acid → metal nitrate + hydrogen
11. Recall the order of metals in the reactivity series.	See page 7 (You may have learned a mnemonic to help you)
12. Describe chemical reactions to show which chemicals are needed for iron to rust.	See page 8 
13. Recall the word equation for rusting.	See page 8
14. Suggest reasons why it is important to control rusting.	Iron becomes weakened and is less fit for the intended purpose – there may be safety considerations Metal objects have to be replaced – financial cost
15. List four methods of preventing rusting and explain how they work.	See page 9 (You do NOT need to learn answers to the DVD questions or Cars for Scrap)
16. Recall that a more reactive metal will replace a less reactive metal from a solution of its compound.	This learning outcome is about **displacement reactions** See page 11
17. Place metals in order of reactivity by studying displacement reactions, carrying out the reactions safely.	See pages 12 - 13
18. Predict the products of displacement reactions.	A more reactive metal displaces a less reactive metal from its salt (compound) e.g. magnesium + copper sulfate → magnesium sulfate + copper the magnesium has displaced the copper from copper sulfate
19. Write word equations for displacement reactions.	See page 12
20. Recall the names of three unreactive metals and explain what they are used for.	See page 15
21. Compare different types of light bulbs from data given, including running costs and energy efficiency.	See pages 14. Do NOT learn all the information here but be able to carry out a similar comparison from provided data in the examination paper.

2. Periodic Table including tables & graphs

Learning Outcome/Objective	Notes to help with learning/revision
1. Explain briefly the work of Dmitri Mendeleev in developing the periodic table.	See page 2, in particular the summary at the bottom of the page.
2. Omit	
3. Label the main areas of the periodic table to include metals, non-metals, alkali metals, halogens, transition metals, noble gases.	See page 3 and your coloured version of the GCSE Data Leaflet/Periodic Table. Can you recall the two elements which are liquid at room temperature, or those which are gases?
4. Locate an element by using the terms period and group.	See page 3. Example of this type of exercise is in parts (i) and (j)
5. Know the symbols for common elements in the periodic table.	See page 4. Learn these! Remember if an element has a two letter symbol the first letter is upper case and the second letter is lower case, e.g. "NA", "nA", "na" are all **wrong** – it should be "**Na**".
6. Define the term 'element'.	See page 4
7. State observations when alkali metals react with water.	 See page 5.
8. Recall the colours and states of the halogens at room temperature	See page 7.
9. Describe simple trends in the properties of the alkali metals.	See page 6. Don't try to learn off figures and detail.

10. Recognise similarities in alkali metals' properties	See page 6. All react with water; all produce an alkaline solution; all reactive. Some of the alkali metals float in water.
11. Describe simple trends in the properties of the halogens	See page 7. It the general trends that are important – don't try to learn off figures and detail.
12. Recognise similarities in the properties of halogens	See page 7
13. Describe simple trends in the properties of some elements based on data within the periodic table's group	
14. Recognise similarities in the properties of the noble gases	
15. Predict the properties of some elements based on data within the periodic table's group	
16. Recall uses for chlorine, iodine and noble gases	
17. Construct, and read information, from tables	See pages 9 - 15
18. Construct and interpret graphs including pie charts, bar charts, scatter graphs and line graphs	
19. Draw lines of best fit and recognise anomalous results	
20. Describe the relationship or trend between two sets of data from a table or a graph	

3. Atomic Structure

Learning Outcome/Objective	Notes to help with learning/revision
1. Name the three particles making up an atom	See page 2. Take care with spelling of "n **e u** t r o n" and also "n **u** c l **e u** s"
2. State the mass, charge and location of the particles in an atom	See table 1 on page 2. Note that the mass of an electron is 1/2000 of a proton. When you're asked for the charge of a proton or an electron don't forget to write the sign e.g. "+1" for the charge of a proton
3. Calculate, from given data, the number of protons, electrons and neutrons	See pages 2 – 3 ***No of protons = atomic number*** ***No of electrons = atomic number*** ***No of neutrons = mass number – atomic number***
4. Describe the structure of atoms in terms of numbers of protons, electrons and neutrons	Look at pages 4 – 5. Can you draw an atom to show the number and the location of the different particles? (electrons are in shells, protons and neutrons are in the nucleus)
5. Define the terms ***atomic number*** and ***mass number*** in terms of particles.	Definitions are on page 2 ***Atomic number = number of protons*** ***Mass number = number of protons and neutrons added together*** 
6. Represent elements in a shorthand way to include atomic number and mass number	You will see examples of this shorthand on page 3 of your booklet
7. Draw diagrams to represent the structure of an atom from the first twenty elements of the periodic table.	See page 5 of your booklet for examples. Practise doing this if you were given the atomic number and the mass number. Redo some of the questions from page 5 to help you revise.
8. Write the electronic configurations for an element	See examples in table 3 on page 4. Remember you should never be using the figures "0" or "9" when writing an electronic configuration.
9. Relate the electronic configuration to reactivity and position in the periodic table	This links with your Periodic Table topic. The number of electrons in the outer shell is the same as the Group number in the Periodic Table; e.g. Potassium 2.8.8.**1** so group 1, therefore a reactive metal (alkali metal)
10. State the approximate size of atoms	See page 6. Typical diameter of an atom is 10^{-10} m, or 1/10 of a nanometre. A nanometre is a billionth of a metre i.e. 1 x 10^{-9} m
11. Briefly explain what is meant by ***nanoscience*** and give one example of where nanoparticles are used.	See page 6. Nanoscience is the study of nanoparticles. [Size of nanoparticle is between 1 – 100 nm].
12. List one advantage and one disadvantage of nanoparticles	See the examples, advantages, disadvantages on page 6 of your booklet.

4. Chemical Symbols and Simple Formulae

Learning Outcome/Objective	Notes to help with learning/revision
1. List the number of atoms and the names of the elements in a chemical formula.	Page 1 of booklet e.g. in MgF_2 there are two elements (Magnesium and fluorine) and 3 atoms: 1 x Mg and 2 x F
2. Name simple chemical formulae.	Page 2 of booklet e.g. Al_2O_3 is NOT aluminium *oxygen*, it is called aluminium *oxide*.
3. Write simple chemical formulae using the idea of valency.	Pages 3 and 4. You need to be able to **work out the valency from a section of the periodic table – you do NOT need to remember all the valencies**

M. Christie (April 2024)

Key words – know what these words means:

Metals topic:	corrosion, displacement, ductile, exothermic, galvanising, lustre, malleable, melting point, rusting
Periodic Table topic:	alkali metals, anomaly, boiling point, density, element, group, halogen, inert, melting point, noble, period, sublimes
Atomic Structure topic:	atom, atomic number, electron, electronic configuration, mass number, nanoparticle, nanoscience, neutral (electrically), neutron, nucleus, proton, shell
Chemical symbols and simple formulae topic:	valency, group number

End of Revision Sheet