

WEEK 2

GENERAL CHEMISTRYScientific Skills:

1. The _____ variable goes on the x-axis and the _____ variable goes on the y-axis.

2. Interpret the graph given below.

3. Draw the line of best fit.

Safety in Laboratory:

4. What is the purpose of eyewash fountain in a laboratory?

5. Write the name of the hazard symbol given below and state examples where this symbol can be found.

e.g:

6. Explain how acids can be disposed in a laboratory.

Experimental techniques:

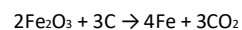
8. Differentiate between reflux and distillation.

Green Chemistry:

9. Explain what green chemistry is.

10.

The reaction equation for extracting iron from its ore using carbon is:



Calculate the atom economy of this reaction.

INVESTIGATING MATTERAtomic Structure andBonding:

11. Two common isotopes of naturally occurring Neon are ^{20}Ne and ^{22}Ne . Calculate the percentage abundance of each isotope if the relative atomic mass of naturally occurring Neon is 20.18. Assume 20.18 = 100%

12. Fill the table below

Quantum number	symbol	# of orbitals
Principle		
Secondary		
Magnetic		
spin		

Atomic structure and bonding:

14. Which principle is to be followed when writing the quantum numbers?

15.
a. write the electron configuration for sodium ion.

b. show the orbital diagram

16.
a. write the electron configuration for Chloride.

b. show the orbital diagram

7. State one information that can be found on the SDS.

13. Write the electron configuration of oxygen and determine the 4 quantum numbers of the 8th electron.

____, ____ , ____ , ____

17. _____ rule states that electrons are filled singularly first before any pairing can occur.

WEEK 3

<u>Atomic structure and bonding:</u>	<u>Trends in periodic table:</u>	<u>Chemical Bonding:</u>	<u>Polarity of Molecules:</u>	<u>Intermolecular attraction:</u>
<p>18. a. Use the electron configuration for Chromium and draw the orbital diagram. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$</p> <p>19. Write the abbreviated electron configuration for Manganese.</p>	<p>21. Explain why O^{2-} ion has a larger radius than oxygen atom.</p> <p>22. Provide explanations for the following: The 1st ionisation energy of boron is lower than the 1st ionisation energy of beryllium.</p>	<p>24. Differentiate between ionic and covalent bond.</p> <p>25. Draw the Lewis structure of and determine the shape of the molecule: a. NO_3^- b. CO_3^{2-}</p>	<p>27. Explain why : O_2 is a non-polar molecule but NH_3 is a polar molecule.</p> <p>28. Show the formation of dative bonds in the following compounds: a. NH_3 and BF_3 b. H_2O and H^+</p>	<p>29. Name the type of intermolecular attraction present in the following substances. a. Two iodine molecules _____</p> <p>b. A solution of $CaCl_2$ and water _____</p> <p>30. Explain: The boiling point of straight chain alkanes increases with increase in the number of carbon atoms.</p> <p>31. Arrange the following compounds from the weakest to the strongest intermolecular attraction. HBr, Br_2, HI, HF</p>
<p style="text-align: center;"><u>Trends in periodic table:</u></p> <p>20. Describe the trends in atomic radii across the</p>	<p>23. a. Explain the trends in electronegativity across the period and down</p>	<p>26. How many pi and sigma bonds are there in</p>		

	period and down the group in a Periodic Table.	the group in a periodic table. b. Arrange the elements in the order of increasing electronegativity: Mg, Si, F, K, N	ethyne.		
--	--	--	---------	--	--