16. (a) Distinguish between isotopes and allotropes   (2mks)

Isotopes - Atoms of same element with the same proton number but different neutron no.
Allotropes - Different forms of an element in the same physical state.

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(b) An element X has RAM of 69.39. given that the element has two isotopes of ~~RAM of~~ *Masses* 60.15 and 70.15. Calculate the relative abundance of each isotope   (3mks)

$$69.39 = \frac{(X \times 60.15) + ((100-x) \times 70.15)}{100}$$ ✓ 1
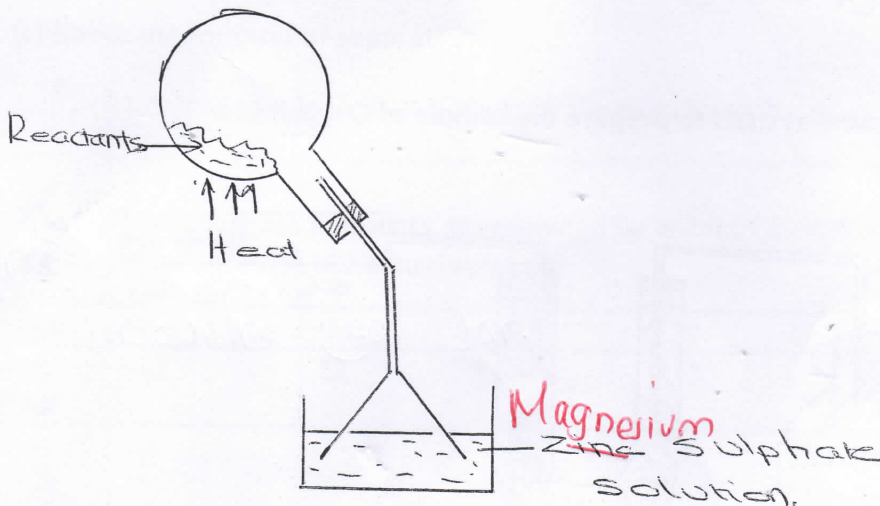
$$X = 7.6\%$$ ✓ 1

$$100 - X = 92.4\%$$ ✓ 1

17. A student has a mixture of anhydrous aluminium chloride and zinc sulphate. Which is the simplest method of separation?   (1mk)

Sublimation.

18. A student prepared ammonia and bubbled it into a solution of ~~zinc~~ *Magnesium* sulphate as

shown in the diagram below.

Reactants

Heat

Magnesium ~~Zinc~~ Sulphate solution.

(a) Name any two reactants required for the production of ammonia.   (1mk) ~~(2mks)~~

Calcium hydroxide } Tried   Any ammonium salt
Ammonium chloride }   and an alkali

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