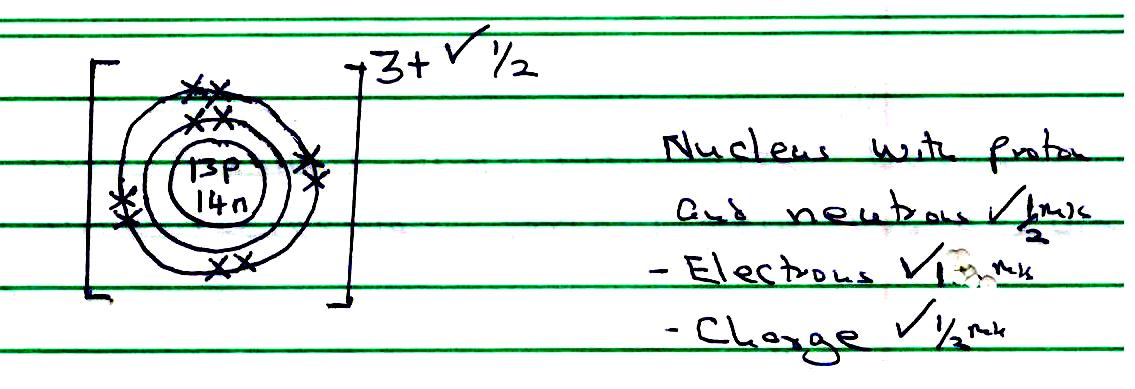
**MARKING SCHEME**

**233/1**

**CHEMISTRY**

**TRIAL 1 EXAMS - AUGUST/SEPTEMBER – 2022.**

1. (a) 

(b) The number of Protons and electrons in an atom are equal.

1. It contains hot glowing Carbon Particles ✓1 which on cooling form soot ✓1
2. (a) Cracking of long chain alkanes.

* Electrolysis of brine.
* Reacting natural gas with steam
* (Mark the first two)

(b) Increases the Surface area over which hydrogen chloride gas dissolves ✓1

(c) - Removing rust from metal

* Sewage treatment / Treatment of water
* Making dyes, drugs and photographic material
* PH control and neutralization in industries

(mark the first two for ½ mark each)

1. (a) Water ✓1

(b) 2 Na₂ O₂ + 2H2O(1), 4 NaOH(aq) + O2(g)

Penalize ½mark for missing or wromg state symbols

(c) Ethyne / Acetylene

-Hydrogen OR Penalize fully if not balanced.

1. Flourine ✓1

It has the smallest molecular size ✓½ hence weakest intermolecular forces✓½ / few van der weal forces.

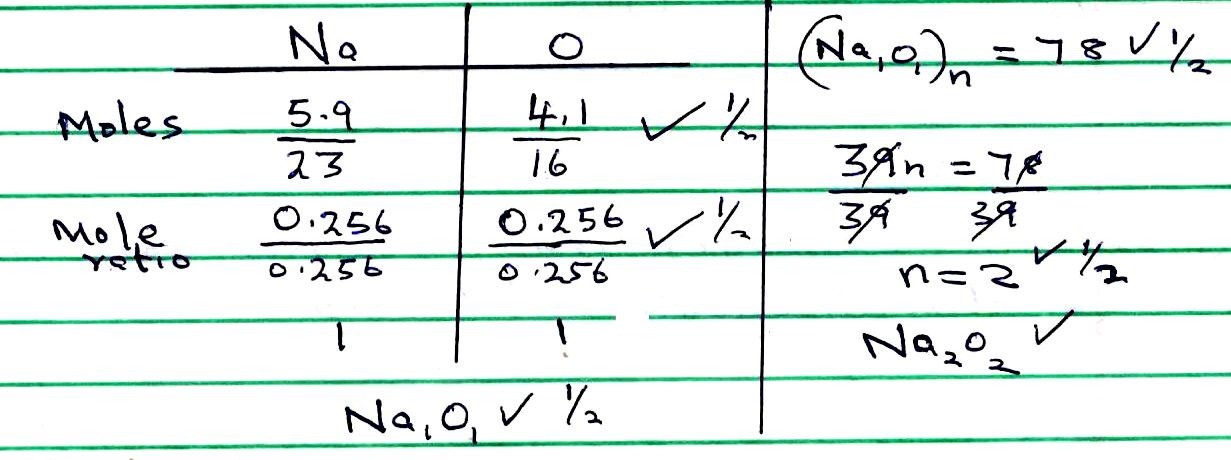
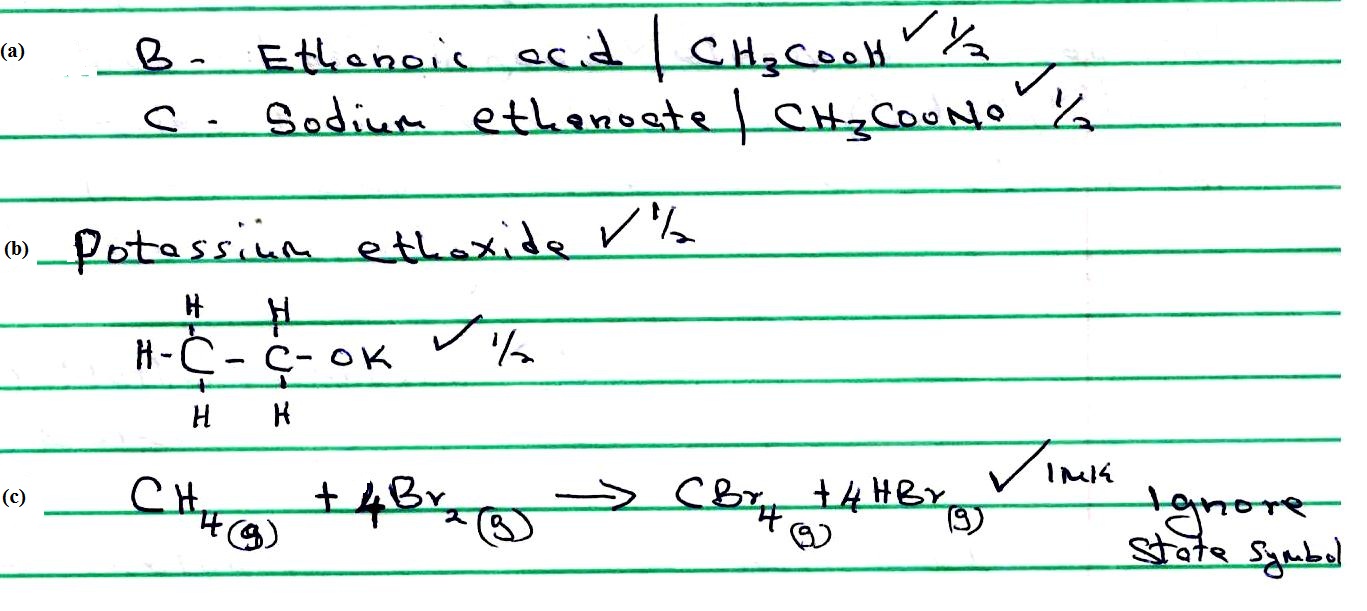
1. Add excess Magnesium granules✓½ to dilute HCl/HNO3/H2SO4,✓½ Stir and Filter,✓½ to the filtrate add Sodium hydroxide/Potassium hydroxide/Ammonia solution,✓½ filter✓½ and dry the residue between filter papers
2. (a) PH of the electrolyte decreases,✓ there is accumulation of Hydrogen ions (H+)✓ since Copper (II) ions are discharged at the cathode.

(b) Cu+ 2e Cu(s) ✓ (1 mark)

(c) Cu(s) Cu+ 2e ✓ (1 mark)

1. (a) White magnesium oxide remains white✓½/ same Magnesium is very high the reactivity series hence hydrogen cannot reduce✓½ magnesium oxide.

(b) Orange/yellow Lead (II) oxide changes to yellow grey lead

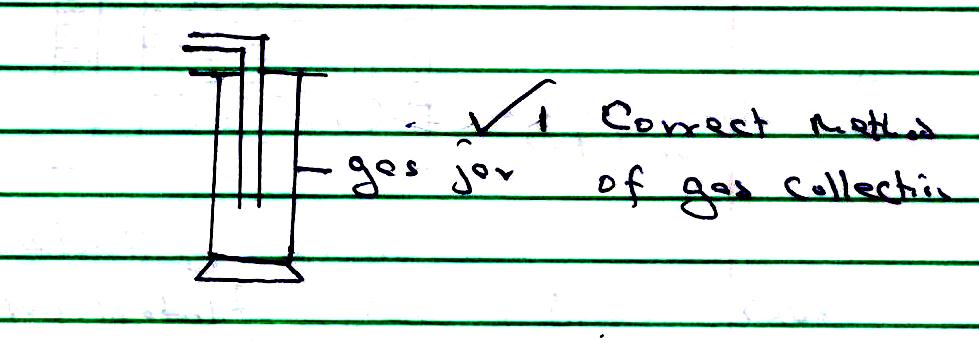
1. Increase in temperature increases the kinetic energy✓½ of the reacting particle, this results in increase in number of successful✓1 collision / effective collision hence increases rate of reaction✓½
2. 
3. 
4. (a) 2Na(s) + 2H2O(l) 2NaOH(aq) + H2(g) ✓ (1 mark)

(b) The oxidation number of Sodium metal increases from 0 to +1, it is oxidized

Oxidation number of Hydrogen in water decreases of +1 to 0✓ it is reduced

1. (a) (i) G - Anhydrous Calcium Chloride✓½ do not accept calcium oxide Q - Concentrated nitric (V) acid

(ii)



(b) Red - brown fumes produced✓½ nitrogen (11) oxide is oxidized✓½ to nitrogen (IV) oxide by air.

1. Potassium hydroxide is fully ionized✓½/ strong base hence has higher electrical conductivity, while Ammonia solution is partially✓½ ionized / weak base hence lower electrical conductivity
2. (a) Methylbutanoate ✓1

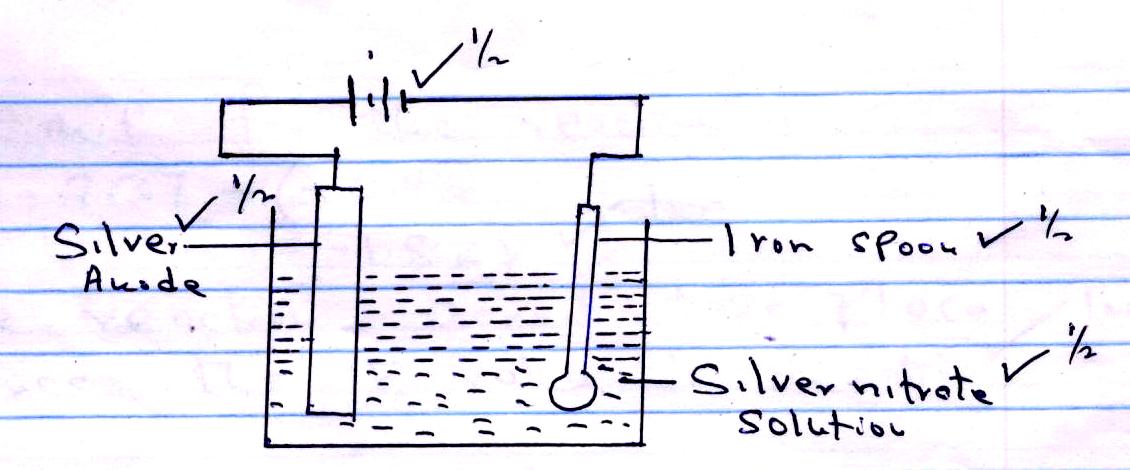
(b) Esters ✓1

(c) Methanol✓½ Not tied

Butanoic acid ✓½

1. (a) The volume of a fixed mass of inversely proportional to its pressure AT A constant temperature✓½

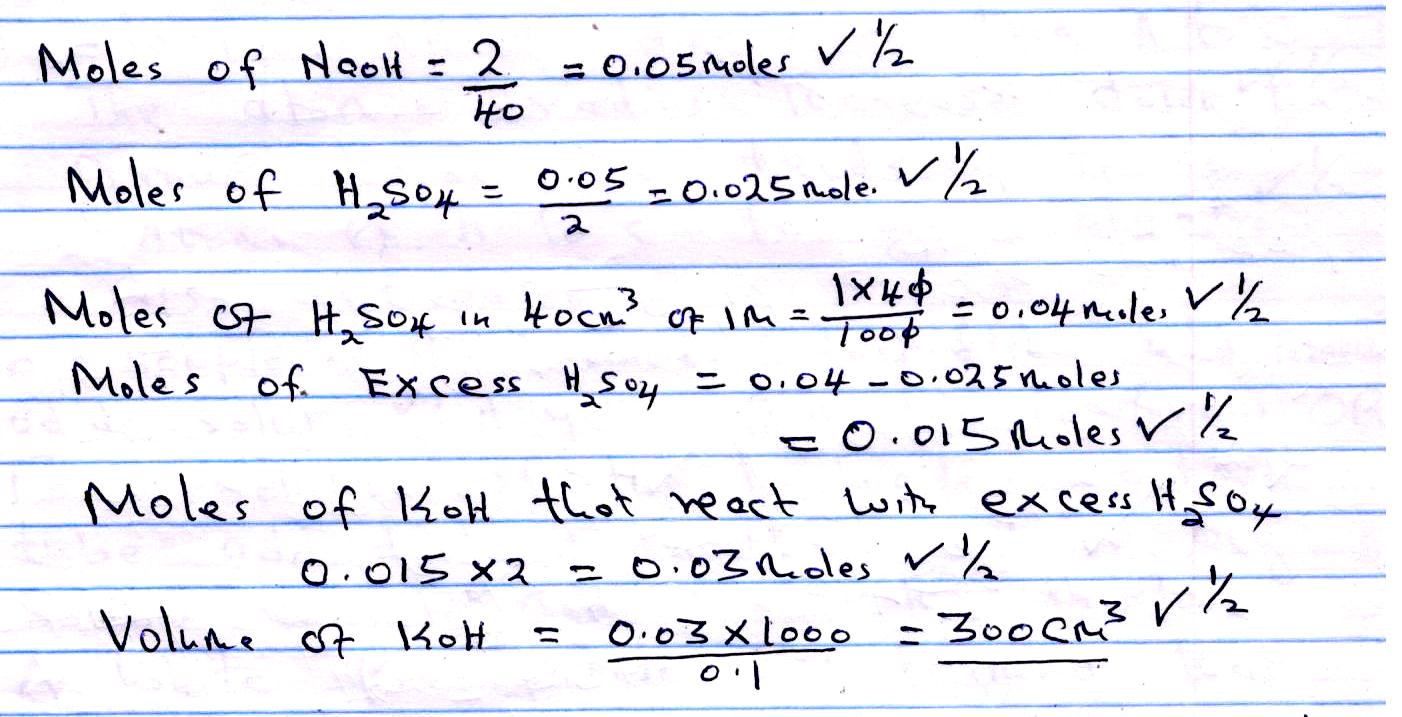
(b) Moist red litmus paper turns blue✓½ then red✓½ Ammonium chloride dissociate when heated into Ammonia gas and Hydrogen Chloride gas.✓½ Ammonia diffuses faster than hydrogen chloride gas

1. 

Labeling 2 marks

Workability 1mark.

Anode must be Silver and electrolyte must have silver ions.

1. 
2. (a) Calcium Carbonate react with dilute sulphuric (vi) acid to form Calcium sulphate that is insoluble✓ and forms a coating and stops further reaction

(Accept equation for 1 mark)

(b) (i) Used as a reducing agent in extraction of metals (ii) Used as fuel

(Mark the first one for 1 mark).

1. The e.m.f for the reaction is

= -2.37 - (-0.44)

= -1.83V✓ 1 mark

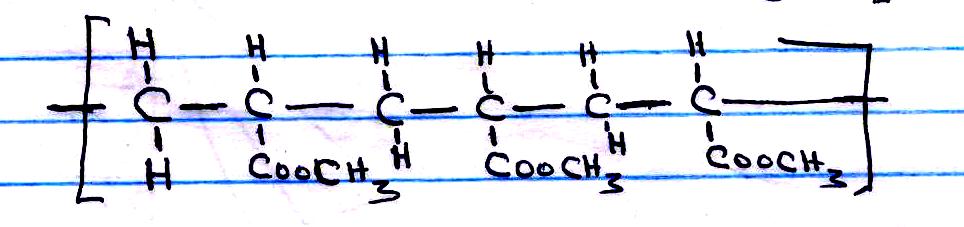
The reaction cannot take place

since the E value is negative. ✓1 mark

1. (a) Electron affinity. It is the amount of energy released when an atom gain election(s)

(b) Electron affinity decreases from A to C.✓1 The atomic radius increases down ✓½ the group hence the tendency of ✓½ Atoms of A to C to gain electrons also decreases.

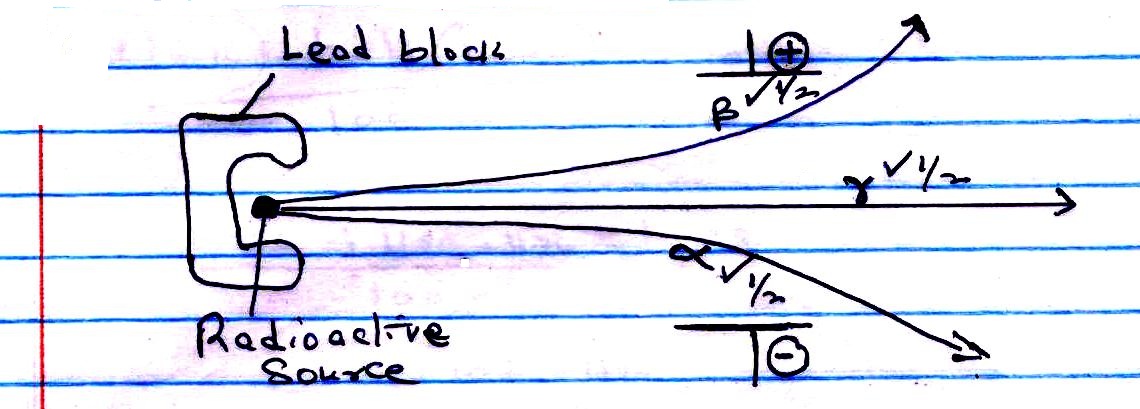
1. To a sample of the herbicide in test tube, add Potassium Iodide solution,✓1 A yellow precipitate is formed **OR** To a solution of the herbicide in a test tube add dilute hydrochloric acid or any soluble Chloride✓½ , and warm✓½ the mixture. A white precipitate is formed✓½ that is soluble on warming. ✓½
2. (a)

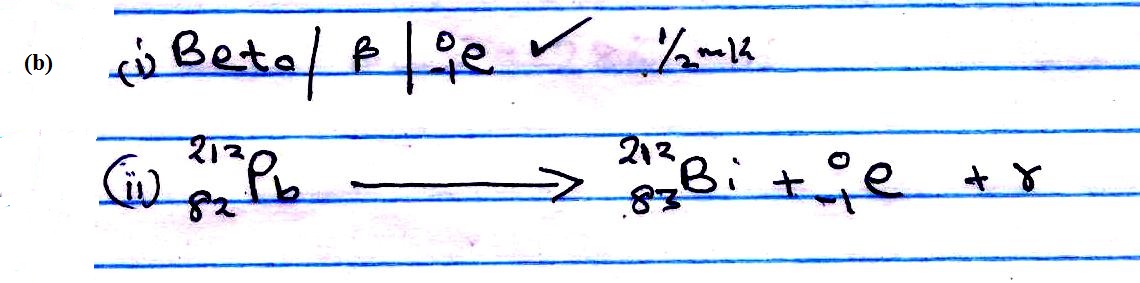


(b) Molecular mass of monomer = 48 + 32 + 6 = 86✓½

Number of Monomers = ✓1 = 90✓½

1. (a)



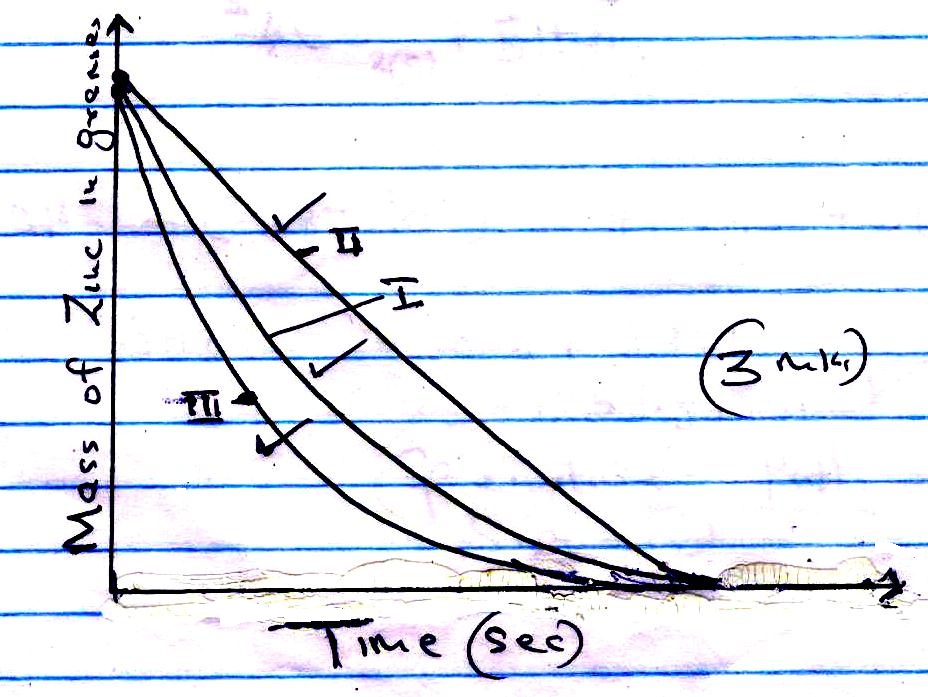


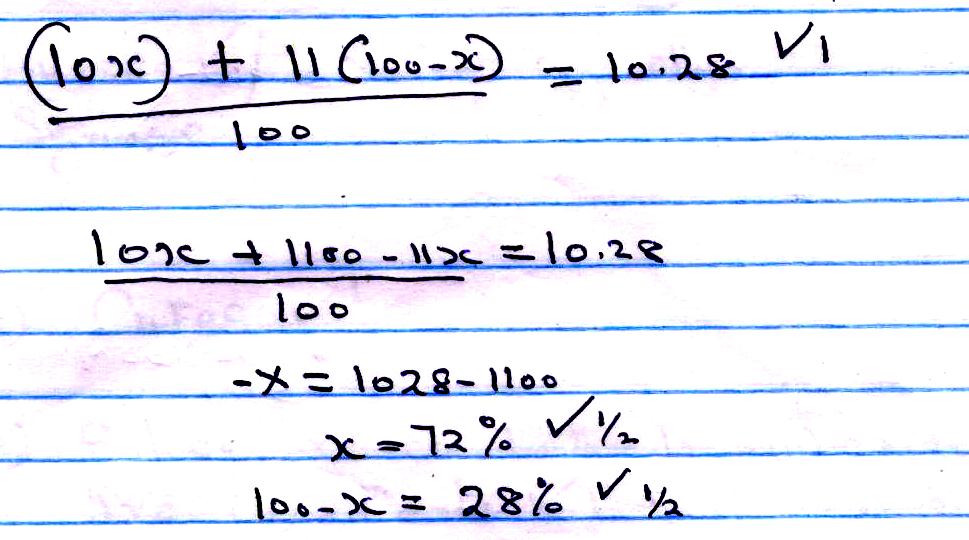
1. a) PH values ranging from 4.5 - 6 ✓½ NB State one value within the range penalize if range is given

Sulphur (IV) oxide dissolves in water forming Sulphuric (IV) acid✓½ which is a weak acid.

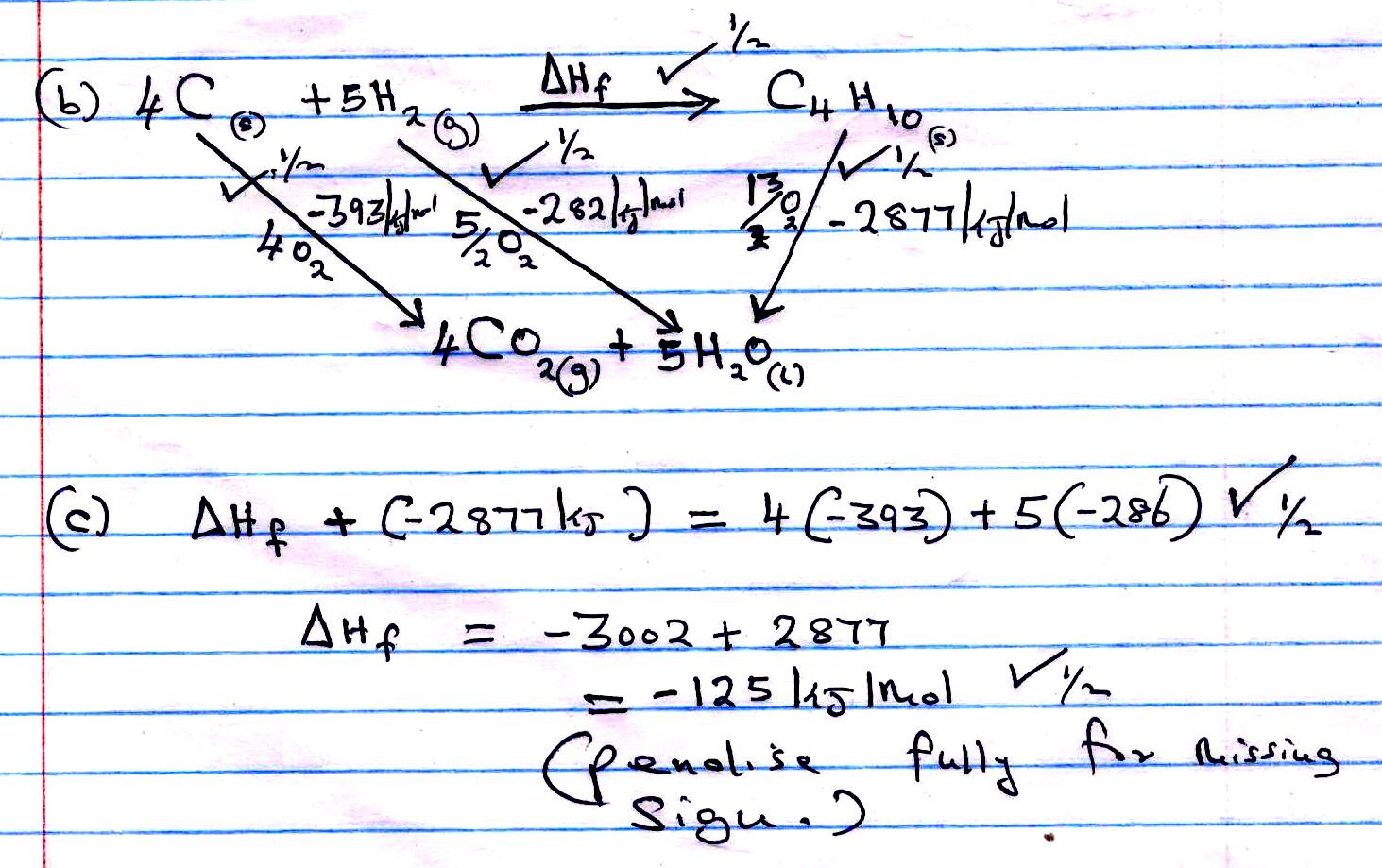
(b) Pink flower is bleached! ✓1

Sulphuric (IV) acid removes oxygen✓1 atom in the dye, and form Sulphuric (VI) acid/Sulphuric (IV) acid bleaches by reduction.





1. (a) It is the enthalpy change that occurs when a substance is formed from its constituent elements under standard conditions.

1. ✓½

1. Burette✓1/reject any other

OR

Syringe

1. (a) CuFeS2 ✓1

(b) Silica react with Iron (11) oxide to form Iron (II) silicate which is a major component of slag.