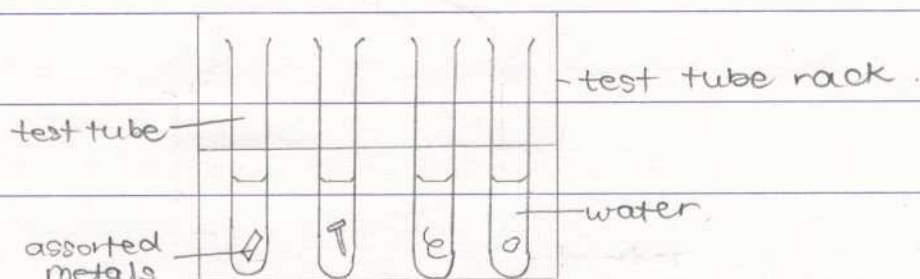


Question 29

- (ai) ~~Steel~~ Iron
- (aii) Aluminium is used in many structures exposed to oxidising conditions because it is a passivating metal, and therefore can resist corrosion.
- (bi) Zinc
- (bii) Sacrificial anodes are added to metal-hulled ships because they are able to oxidise the many substances that they are exposed to.
- (c) By adding other elements to iron, it decreases (reduces) its purity, and hence adds to its malleability, and ability to corrode. This causes steel to gain some corrosive properties even though steel is a passivating metal.
- (di) 'Corrosion' is the degradation of a metal, causing rust; it occurs when exposed to oxygen & water.
- (dii) Aim: to compare the corrosion rates of different metals or alloys.
- Method: 1. Set up ~~a galvanic cell~~ ^{equipment} as shown



(in diagram) below :



2. Leave experiment (to settle) overnight.

(Next day) ↓

3. Observe the rate of corrosion of the assorted metals.

4. Tabulate results.

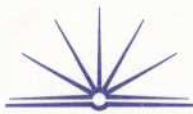
(diii) * The water used in each beaker must be of equal volume to be accurate. (Water just needs to cover the metal)

* The time in which each metal is immersed should be the same.

(e) Tin: To clean, stabilise and preserve tin;

* Electroplating - this method will resist the metal from further corrosion by plating it with another metal (passivating metal) for a coating.

* Paint the tin - this method is similar



to that of electroplating, but paint is used instead of another metal.

* To preserve tin, firstly, dry the tin metal artefact (with a piece of tissue ^{like-} material depending on size of metal) ~~then~~ to dehydrate the metal and thus remove any chloride ions. Then, heat the metal.

* To clean the tin, an alternative method would be to use a laquer, to coat the metal, so that it is polished and clean.