Chemistry-Exam-1st term

Important Mistakes

Part A. Q.18:

▼ 18. Metal X is more reactive than plantium but less reactive than iron. Which of the following statement is likely to be true.

- A)The oxide of X can be reduced by heating with carbon
- B)X react with dilute HCl vigorously
- C)X burns vigorously in air to form oxide
- D)X display iron from iron(II) sulphate solution

▼ Ans:

- **(A)**. Since **[the reactivity of metal X is lower than iron]** & **[The iron can be reduced by carbon]**,
  - *Shows that the extraction of metal X is easier than iron.*
  - Nearly all the metal in the series can be reduced by the carbon from the metal oxide.
- (B) is wrong. Through the reactivity table of metal,
  - **[the reaction of iron & HCl acid is not vigorous]** & [R. of metal X < R. of iron] ⇒ **[X won't react vigorously]**
- (C) is may be wrong. Through the reactivity tables,
  - **[the metal less reactive than iron can still be form oxide when burning with air]**

  ▼ Example:

  1. Lead 2. Copper 3. Mercury
- (D) is wrong, Through the reactivity tables,
  - **[the reactivity of metal X is lower than iron]** ⇒ **[The reactivity of the compound is reversed]**
  - In order to have stable structure ⇒ displacement won't occur.

▼ Analysis

- I wrote down D as my ans.
- **[The concept behind the reactivity table is not clear]** ⇒ Need to do more exsercise on Ch.10-11
- **[The reversed reactivity table is not clear enough in mind] ⇒ Need to do more ex. on this kind of question**

Part A. Q.20:

▼ 20.In which of the following experiments would a metal be produced ?

1)Heating iron(III) oxide with aluminium

2)Adding zinc to silver nitrate solution

3)Heating copper with magnesium oxide

- A: 1 & 2
- B: 1 & 3
- C: 2 & 3
- D: 1 & 2 & 3

▼ Ans:

- **(1)**. *May be true*. However, it can be predicted.
  - **[Since the reactivity of alumminium is higher than iron] ⇒ [The Reactivity of Compound is reversed]**
  - The oxide ion tend to **form compound with alumminion** ⇒ More stable
  - The oxide ion go away and iron can be produced.
- **(2)**. *100% True*. Since the reactivity of zinc is higher than silver.
  - The compound of the silver is much more reactivity than zinc's compound
  - Zinc tends to loss electron to silver ⇒ silver is formed
- **(3)**. Wrong. Since the reactivity of copper is stable than magnesium ⇒ **[The Copper oxide is reactive than Magnesium Oxide]**

- The oxide ion want to archive stable structure ⇒ Keep forming compound with magnesium
- No metal can b produced.

▼ Analysis

- **切記勿眼快手快 , 當时Mindset 为 (1)不肯定 & (2)肯定， 所以直接没看 (3)，導致選擇了 C**
- Should read all the choiced and analysis one by one.

Part B. 1)Bi

▼ Define the term 'Relative Atomic Mass' of an element

▼ Ans:

- The Relative Atomic Mass of an element is the weighted average of the relative isotopic mass of the naturally occur isotopes of the element in the scale of Carbon-12.

▼ Analysis:

- **該背的還是要背的呢，不可以有一點錯漏**

Part B. 1)Biii

▼ State the difference, if any, in the chemical properties of isotopes of iron. Explain your answer.

▼ Ans:

- **Isotopes of iron have the same chemical properties**
- **same electronic arrangement / no. of protons or electrons.**

▼ Analysis:

- Need to write down **[both the no. of the prontons & electrons are the same]**

Part B. 1)Ci

▼ Explain why iron can easily be hammered into different shapes.

▼ KeyPoint:

- Non-directional
- The attraction force between **[delocalised electron]** & **[metal cation]** ⇒ metal cation slide over each other easily.

▼ Analysis

- Please remenber the key point.

▼ 框架

- Point out the structure
- Properties **[Directional / Non-Directional]** ⇒ The reason behind.

Part B. 2)Cii

▼ Pure iron is quite soft. Most iron is used to make steel. Mild steel contains 0.1% carbon. Explain why mild steel is less malleable than pure iron.

▼ Keypoint:

- The mass of carbon and the iron atom are differernt.
- Stop the movement of the iron cation.

▼ Analysis

- Look at the diagram ⇒ What phenomenon can be observed?
- Directly write it out ⇒ Focus on the question
  - Don't really need to discuss how the thing lead to this phenomenon.
    1. *In this Question, we mainly can focus on the movement of the cation*
    2. **[Not the attractive force act on the cation]**

Part B. 2)Aii

▼ The student added water to the calcium oxide formed. Write a chemcial equation for the reaction involved.

- Ans:

$$CaO_{(s)} + H_2O_{(l)} \longrightarrow Ca(OH)_{2(s)}$$

- Analysis:
  - It is neccessary to remenber the product of the equation.

    The wrong ans:

$$Wrong\ Ans: CaO_s + 2H_2O_{(l)} \longrightarrow Ca(OH)_{2(s)} + H_{2(g)}$$

Part B. 3)E

▼ Explain why this process can only be used to remove some particles from the mixture.

▼ Key Point:

- Describe why the solid stuff can be filter but the dissolve sub. can't
  - Solid Stuff is actually have a very large particles ⇒ Can't pass through the small hole of the filter paper
  - Liquid Form stuff is very very small ⇒ Can pass the smally hole of the filter paper

▼ Analysis:

- The ans need to be **[more strike forward]** ⇒ Give a reason in a **[particles level]**.
- Discuss the reason behind with the mechanical reason in particles level

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Part B. 5)B

▼ Why is a colourless gas formed when Z is added to silver nitrate solution?

- Key-Point:
  1. React with the water in the silver nitrate
  2. Give out some gas

▼ Analysis:

- Need to focus on the observation in a particle views.

- Not just simply **[Produced lots of heat & gas come out through evaporation]**
- Think about **[How the Particle would react]** and give out heat & gas.

Mindset Mistakes

- Structrue Question:

Town gas (main constituents being carbon monoxide and hydrogen) was passed over the oxide. The oxide was reduced to lead in the experiment. Heating was stopped after some time. Town gas was still passed through while the combustion tube cooled down. The following results were obtained.

▼ Question A: Why was town gas passed through while the combustion tube cooled down?

- Mindset develop:
  1. What If :
     - ▼ Example:
       - Due to this question : What if we stop the passed through while the tube cooled down.
         - The Air may go in to the tube ⇒ Form oxided again.
     - For find a ans.
  2. Doubt your ans.
     - Check you ans.
  3. Write down the answer.

▼ Wrong ans for Question A.:

- It is because to ensure all the lead oxide is completely reduced to lead.

Step1: Done

Step2: Why I really need to waste town gas while it is not heating?

- I nearly can ensure that after heating, all the lead oxide become lead.

▼ Wrong ans for Question D:

- It is because to ensure the data of the weight of the tube is correct.

  Step2: Doubt You ans ⇒ Why I really need to burn the excess gas? ⇒ Why I can't just let the gas go?

  - No Ans to the above question. ⇒ Ans is wrong ⇒Repeat Step 1.

Careless Mistakes

Part B. 4)A

▼ Question-Type: Balance the chemical equation

- Analysis: Need to count the element **[One By one]** carefully.

Part C. 5)Cii

▼ Question-Type: How the metal can extract

- **Describe the process but no the name for the process**
