Chemistry exam on chapters 1 to 5

Mr. Mechall
0124064691

Question (1):

A) Give reason for:

1- Nitrogen has variable oxidiation number in its compounds.
2- Nitric acid is strong oxidizing agent.
3- Calcium Cyanamid is used as agriculture fertilizer.
4- Alkali metals are considered as strong reducing agents.
5- Chromium metal resists action of atmospheric air.
6- Hydrated Cobalt II chloride is used in secret ink.
7- Transition elements have catalytic activity.
8- Copper (II) ion is coloured , while copper (I) ion is colourless.

B) Compare between blast furnace, Midrex furnace and oxygen converter according to:
charge – reducing or oxidizing agent – type of produced iron.

Question (2):

A) Explain with balanced chemical equations how to prepare nitric acid in laboratory.

B) Explain with balanced equations:

1- Passing hot air on red iron, and then reacting the products with concentrated sulphuric acid.
2- Passing chlorine gas on red iron, and then reacting the products with ammonia solution.
3- Preparing the three iron oxides from iron II sulphate.
4- Preparing ammonia gas from nitrogen gas.
5- Preparing nitric acid from potassium nitrate.
6- Reaction between copper sulphate with sodium hydroxide, then heating the products.
7- Preparing lithium oxide from lithium hydroxide.
8- Preparing sodium hydroxide from sodium chloride.

Question (3):

A) Write down the scientific term:

1. Elements have oxidiation number ranges from +5 to -3
2. The produced ion from combination between ammonia molecule and water.
3. Heating iron ores strongly in air.
4. A chemical substance repel with magnetic field due to the presence of paired electrons in d-sublevel.
5. Elements in which 5f is filled in sequence.
6. The presence of element in different forms has different physical properties and has similar chemical properties.
7. A chemical bond formed due electric static force of attraction between positive and negative ions

B) Compare between : haematitie – magnetite – limonite
According to: chemical formula – colour – scientific name

Question (4):

A) How can you differentiate between :

1- Nitrogen gas and ammonia gas.
2- Copper sulphate – aluminum sulphate – iron II sulphate – iron III sulphate.
3- Sodium nitrate – sodium nitrite.
4- Lithium carbonate – sodium carbonate.
5- Diluted nitric acid – concentrated nitric acid.

B) What is meant by:

Electronagativity – Hund's rule – hybridization – valance bond theory – oxidation number.

Question (5):

A) Write the electronic configuration for the following elements: $_{35}Br$ - $_{20}Ca$ - $_{24}Cr$ - $_{54}Xe$
Then find the type of element and its location in the periodic table.

B) Arrange the following bonds according to their polarity: H-Cl , C-O , H-H , N-O

C) Explain how sodium carbonate is prepared in industry?