

HOLIDAY PACKAGE

1. (a) The atomic number of iron is 26.
 - (i) Write the electronic configuration of iron.
 - (ii) List the possible oxidation states of iron.
 - (b)
 - (i) define ore.
 - (ii) name three ores from which iron can be extracted.
 - (iii) Describe how iron can be extracted from one of the ores you have named in b(ii) above.
 - (c) describe how iron reacts with the following.
 - (i) air
 - (ii) acid
 - (iii) sulphur
 - (iv) Hydrogen chloride
 - (v) Chlorine
 - (d) Ferrous oxalate was heated strongly in a test tube.
 - (i) state what was observed and write equation for the reaction that took place.
 - (ii) to the resultant solid was added dilute nitric acid and the mixture boiled. State what was observed and explain your answer.
 - (e) state what is observed and write the equation for the reaction when: -
 - (i) sodium carbonate powder was added to a solution of iron (II) sulphate,
 - (ii) acidified potassium manganate (VII) is added to a solution of iron (II) sulphate.
 - (iii) hydrogen peroxide solution is added to a solution of iron(II) sulphate.
 - (f) Name one reagent which can be used to differentiate iron (II) sulphate from iron (III) sulphate. State what is observed in each case.
2. copper is extracted from its ore by froth flotation.
 - (a)
 - (i) what is meant by froth floatation.
 - (ii) write the name and formula of the ore from which copper is extracted.
 - (iii) describe briefly how copper can be extracted from one of its ores named above.

(b) briefly describe how copper reacts with:

(write equations to support your answer)

- (i) Air
- (ii) Water
- (iii) Acid

(c) state what would be observed and write equation for the reaction between copper (II) sulphate solution and:

- (i) concentrated hydrochloric acid.
- (ii) sodium hydroxide solution.
- (iii) Ammonia solution.

(d) copper (II) nitrate was dissolved in excess concentrated ammonia solution and the solution made up to 1dm^{-3} . The resultant solution was shaken with trichloromethane and left to settle. 50 cm^3 of the organic layer needed 25 cm^3 of hydrochloric acid for neutralization.

25.0 cm^3 of the aqueous layer was neutralized by 40 cm^3 of 0.5M hydrochloric acid. Calculate the concentration of copper (II) ions. The distribution coefficient of ammonia between water and trichloromethane is 25.

END