

CHEMISTRY DEPARTMENT
S.6 BRAINSTORMING TEST
TOPIC; TRANSITION ELEMENTS
SUB-TOPIC; CHEMISTRY OF COPPER

NAME _____

Signature _____ **STREAM** _____

Instructions; Attempt **all** questions in this paper.

1. (a) Write

- (i) The electronic configuration of copper atom (atomic number =29) (01 mark)

(ii) The all the possible oxidation states of copper. (01 mk)

b) (i) State the most common oxidation state of copper.

c) (i) Write the formulae of the oxide of copper in each of the above oxidation states. (1 mark)

(ii) State three reasons why copper is a transition element. (03marks)

(c) Explain why copper

- (i) is a transition element. (01 mark)

(ii) has variable oxidation states. (01 mark)

(iii) forms complexes (03 marks)

(iii) acts as a catalyst in some reactions. (03 marks)

2. (a) Write an equation for the reaction of copper with

(i) Air (1½ marks)

(ii) Chlorine (1½ marks)

(iii) dilute acids (03 marks)

(iv) Concentrated acids. (03 marks)

(b) A solution of copper(II) sulphate turns a blue litmus paper to red.
Explain this observation (03 marks)

3. (a) State what is observed and write an equation for the reaction when warm dilute sulphuric acid is added to copper(I) oxide

Observation

Equation

b) State what is observed and write an equation for the reaction when copper(II) sulphate solution is added each of the following

(i) Concentrated hydrochloric acid

Observation

Equation (1½ marks)

(ii) Sodium hydroxide solution drop-wise until in excess

Observation (01 mark)

Equation(s) (03 marks)

(iii) Ammonia solution drop wise until in excess.

Observation

(01 mark)

Equation

(03 marks)

(iv) Potassium hexacyanoferrate(II) solution.

Observation

Equation

(1½ marks)

4. (a) Write the name and formula from which copper can be extracted.

(b) Describe how the ore is concentrated.

(ii) Using equations only, state how blister copper can be obtained from its concentrated ore above

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