CHEMISTRY ASSESSMENT TEST 1

TIME: 80 MINUTES TOPIC: SULPHUR AND ITS COMPOUNDS

SECTION A

PART I

1. Which one of the following allotropes of sulphur is stable above 96^0C?
   A. Monoclinic sulphur C. Rhombic sulphur
   B. Plastic sulphur D. Amorphous sulphur
2. Which one of the following properties is true about carbon and sulphur? Both elements;
   A. form covalent compounds only C. form acidic oxides only
   B. conduct electricity D. have allotropes
3. Which one of the following gases can bleach flowers but not litmus paper?
   A. Sulphur dioxide B. Nitrogen dioxide C. Sulphur trioxide D. Chlorine
4. Which one of the following compounds is used to prepare sulphur dioxide in the laboratory?
   A. Na_2S B. Na_2SO_3 C. Na_2SO_4 D. $NaHSO_4$
5. Which one of the following is the process by which the property of rubber is improved by treating with sulphur?
   A. Polymeration B. Hydrogenation C. Vulcanisation D. Fermentation
6. Which one of the following substances is the raw material used in the manufacture of sulphuric acid by the contact process?
   A. sulphur B. sulphur dioxide C. sulphur trioxide D. sulphorous acid
7. The reaction between magnesium and dilute sulphuric acid to produce hydrogen shows the property of sulphuric acid as
   A. an oxidizing agent C. a dehydrating agent
   B. a drying agent D. an acid
8. Which one of the following ions reacts with dilute hydrochloric acid to form sulphur dioxide?
   A. Hydrogen sulphate ions C. Sulphate ions
   B. Sulphide ions D. Sulphite ions
9. Which one of the following sulphates when heated strongly will decompose to give sulphur dioxide and a reddish-brown solid?
   A. $CuSO_4$ B. $(NH_4)_2SO_4$ C. $FeSO_4$ D. $Al_2(SO_4)_3$
10. Which one of the following is formed when ethanol is dehydrated by concentrated sulphuric acid?
    A. C_2H_4 B. CH_4 C. CO D. C
11. Which one of the following equations represents a reaction which is not carried out during the manufacture of sulphuric acid by the contact process?
    A. $S_{(s)} + O_{2(g)} \longrightarrow SO_{2(g)}$
    B. $2SO_{2(g)} + O_{2(g)} \longrightarrow 2SO_{3(g)}$
    C. $SO_{3(g)} + H_2O_{(l)} \longrightarrow H_2SO_{4(aq)}$
    D. $SO_{3(g)} + H_2SO_{4(l)} \longrightarrow H_2S_2O_{7(l)}$

PART II

12. Sulphur dioxide turns acidified potassium permanganate solution from purple to colourless	because	Sulphur dioxide is acidic	
13. In the manufacture of sulphuric acid by the contact process, sulphur trioxide is dissolved in concentrated sulphuric acid instead of water	because	sulphur trioxide is insoluble	
14. Sulphur dioxide turns acidified potassium dichromate green	because	It is a reducing agent	
15. Sulphuric acid is a strong	because	Sulphuric acid is highly molecular	
16. Concentrated sulphuric acid is used as a drying agent.	because	Sulphuric acid has a high affinity for water	

PART III

17. Which of the following eqautions is sulphur dioxide (SO_2) belong as a reducing agent?

A. $Cl_{2(g)} + 2H_2O_{(l)} + SO_{2(g)} \longrightarrow H_2SO_{4(aq)} + 2HCl_{(g)}$

B. $2Mg_{(g)} + SO_{2(g)} \longrightarrow MgO_{(g)} + S_{(s)}$

C. $2HNO_3 + SO_{2(g)} \longrightarrow H_2SO_{4(aq)} + 2NO_{2(s)}$

D. $H_2S_{(g)} + SO_{2(g)} \longrightarrow S_{(s)} + H_2O_{(l)}$

18. Which one of the following is/are observed when sugar is warmed with concentrated sulphuric acid?

1. The sugar swells
2. Sugar turns black
3. Steam is evolved
4. Carbon monoxide is evolved.

19. Concentrated sulphuric acid on industrial scale is formed by;

1. Haber process
2. Solvery Process
3. Fractional Distillation
4. Contact process

20. Which of the following substances can be used to produce sulphur dioxide?

1. Sulphur 2. Copper 3. Sodium sulphite 4. Sodium sulphate

21. When concentrated sulphuric acid is added in sugar

1. sugar turns black
2. heat is evolved
3. sulphur dioxide is evolved
4. froathing is observed

SECTION B

1. Hydrochloric acid reacts with sodium sulphite to form a gas Q.
   (a) Identify Q…….…….. (01mark)
   (b) State the conditions under which the reaction takes place. (01mark)

……..…
……..

(c) Write an ionic equation for the reaction leading to the formation of Q. (1½marks)

……
……

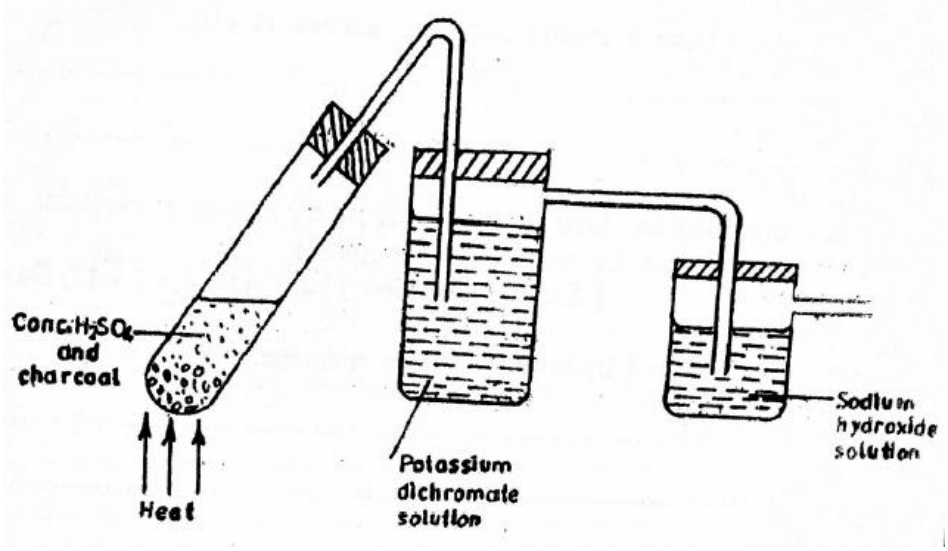
(d) (i) Name one reagent that can be used to identify Q. (½mark)

……

(ii). State what would be observed if Q was tested with the reagent you have named in (d)(i). (01mark)

……
……

2. Concentrated sulphuric acid was heated with charcoal in the apparatus shown in figure 1 below.



(a) Name the gas(es) produced during the reaction between concentrated sulphuric acid and charcoal. (01mark)

……

(b) (i) State what was observed in the tube containing potassium dichromate. (01mark)

……

(ii). Give a reason for your answer in (b)(i) above. (01mark)

……
……

(c). Sulphur dioxide was passed into a beaker containing a red flower and water.

(i) State what was observed. (01mark)

……
……

(ii) Give a reason for your answer in (c)(i). (1½marks)

……
……

3. (a) State the conditions under which sulphuric acid can react with
   (i) sucrose; $C_{12}H_{22}O_{11}$. (½mark)

……

   (ii) zinc oxide. (½mark)

……

   (b) Write equation for the reaction of sulphuric acid with

   (i) sucrose. (1½marks)

……

   (ii) Copper metal. (1 ½ marks)

……

   (iii) zinc oxide (1½marks)

……

   (c) State the property of sulphuric acid which is shown by the reaction with

   (i) sucrose. (½mark)

……

   (ii) Copper metal (½ mark)

……..

   (iii) Zinc oxide. (½mark)

……

SECTION C

1. (a) (i) Name one substance that is reacted with hydrochloric acid to produce sulphur dioxide in the laboratory. (01mark)
   (ii). State the conditions for the reaction. (02marks)

   (iii). Name a substance that can be used to dry the sulphur dioxide formed. (01mark)

   (iv). Write equation for the reaction leading to the formation of sulphur dioxide. (1½marks)

   (b). State what would be observed and explain what would happen if sulphur dioxide is passed through a solution containing
   (i) acidified poassium dichromate. (2½marks)
   (ii) acidified potassium permanganate (2½marks)

   (c). Breifly describe how sulphur dioxde can be converted to sulphuric acid. Your answer shuold include equations and conditions for the reaction(s). (4½marks)

END!!!

"Don't ask what the world needs. Ask what makes you come alive, and go do it."