Final Rank: _____

Final Score: _____

Piqua Regional

Can't Judge a Powder Test

School Name: Answer Key Student Name:_____

School Number:_____ Student Name:_____

Answer the following questions by using your observations. Enter the number(s) of the observation(s) that fully supports your answer on the line provided If an observation was not made for a specific question, you can still get partial credit with a write-in answer.

Answer Credit **(Do not Use)**

GENERAL OBSERVATIONS

1 Control Observation - What was the approximate mass of your sample in grams?
3 grams
_____ 0 1 2 3 4 5

2 Describe the physical characteristics of the sample
white, low luster fine to very fine granulated cracked crystal with some adhesion indicating hygroscopic tendancies
_____ 0 1 2 3 4 5

3 What was the reflective tendencies (Luster) of the sample with regard to light (radiodisity)?
Low luster or dull
_____ 0 1 2 3 4 5

4 If crystalline, were the crystals of uniform shape or irregular?
Very small irregular cracked crystals
_____ 0 1 2 3 4 5

5 Did the sample appear to be hygroscopic?
Sample clumped together, indicating hygroscopic tendancies
_____ 0 1 2 3 4 5

DISTILLED WATER OBSERVATIONS

6 Control Observation - Was the distilled water able to conduct a current?
Distilled water by itself, should not conduct a current
_____ 0 1 2 3 4 5

7 Did the mixture of the substance / distilled water solution conduct a current?
Aqueous sample should not conduct a current
_____ 0 1 2 3 4 5

8 Was the sample hydrophilic or hydrophobic?
Sample readily absorbed water when placed on it.
_____ 0 1 2 3 4 5

9 Was the sample soluble in distilled water?
Sample appears soluble in distilled water
_____ 0 1 2 3 4 5

10 Was there a reaction that occured when sample was mixed with distilled water?
The only reaction that occurs is apparent solubility
_____ 0 1 2 3 4 5

11 How did the density of the sample compare to that of H_2O?
Sample had a density greater than 1 because it sank in H_2O
_____ 0 1 2 3 4 5

HCl OBSERVATIONS

12 Was the sample soluble in HCl?
Sample appears soluble in HCl

_____ 0 1 2 3 4 5

13 Was the HCl / sample solution able to conduct a current?
HCl + sample conducts a strong current

_____ 0 1 2 3 4 5

14 How did the density of the sample compare to that of HCl?
Density of sample is greater than HCl because it sank

_____ 0 1 2 3 4 5

NaOH OBSERVATIONS

15 Was the sample soluble in NaOH?
Sample appears to be soluble in NaOH

_____ 0 1 2 3 4 5

16 How did the density of the sample compare to that of NaOH?
Density of sample is greater than NaOH because it sank

_____ 0 1 2 3 4 5

BENEDICTS SOLUTION OBSERVATIONS

17 Was the Benedict's Solution miscible with the aqueous sample?
Yes, it mixed with little effort

_____ 0 1 2 3 4 5

18 What color was the aqueous solution with Benedict's before heating
Robbin's Egg blue

_____ 0 1 2 3 4 5

19 When the aqueous solution with Benedict's was heated in a hot water bath, was there a notable change?
yes, it turned milky white, then pale yellow, then caramel brown

_____ 0 1 2 3 4 5

20 What was the final resultant color of the aqueous solution with Benedict's after heating in hot water bath?
Caramel Brown

_____ 0 1 2 3 4 5

CONCLUSIONS:

Write in your answer, then support that answer with Observation numbers that apply
Inaccurate or inapplicable Observations will be marked as wrong. Be sure they support your answers!

21 Would you classify the substance as a covalent compound or an ionic compoun(

Ans: *Covalent compound, due to not conducting a current when mixed with H2O*_____

Supporting Observations:_____ 0 1 2 3 4 5

22 Why would you classify the substance as organic or inorganic?

Ans: *Most organic compounds are not soluble in H2O. The ones that appear to be will not conduct a current in H2O*

Supporting Observations:_____ 0 1 2 3 4 5

23 Why would you classify the sample as a monosaccharide or a disaccharide?

Ans: *Monosaccharides react with Benedict's Solution, disaccharides will not*

Supporting Observations:_____ 0 1 2 3 4 5

24 Why would you classify this sample as Acidic, Basic or Neutral?

Ans: *Aqueous sample tested neutral with pH paper*

Supporting Observations:_____ 0 1 2 3 4 5

25 Explain why there were or were not free ions and or cations present in the HCl / sample solution?

Ans: *HCl by itself has free ions and cations that didn't react with the sample*

Supporting Observations:_____ 0 1 2 3 4 5

26 Explain why you believe the specific gravity of the substance was greater than or less than 1?

Ans: *Sample sank in water before dissolving*

Supporting Observations:_____ 0 1 2 3 4 5

27 Explain what observations may indicate that there are free Copper cations present in Benedicts Solution?

Ans: *A blue color liquid often indicates the presence of copper. The Benedicts conducted a current indicating that they were free cations*

Supporting Observations:_____ 0 1 2 3 4 5

Our thanks to Dan Holdgreve for submitting this exam for posting on The Wright Center website. If you have an exam or a coaching activity that supports a current Science Olympiad event, please consider havng it posted so other Science Olympiad coaches may benefit from your knowledge and expertise. Exams may be submitted to: LWothworld@aol.com