

POTIONS AND POISONS
PEMBROOKE HILL INVITATIONAL
DECEMBER 7, 2024

TEAM NUMBER _____

TEAM NAME _____

Time block _____

INDIVIDUAL TEAM MEMBERS

Note: only this answer sheet will be graded, do not write on
anything else!

Lab grade out of 34
Test grade of out 52

LAB TASK:

TASK 1 (16pts)

step	observations	Numerical data
1	Look for observations about the color and texture of the 2 ingredients before mixing, blue crystals, 2–observations about both ingredients	Temperature 1 Room tempish, 18-22 C or equiv in F Conductivity 1 Low to medium for tap water
3	The 2 ingredients mixed–color of liquid is now blue, the crystals fully disappeared exo/endothermic are not observations got warmer or colder are observations 1	Temperature 1 Same to slightly changed Conductivity 1 Medium to HIGH

Questions from Step 5:

A. Answers varied and depended on the data (2pt)

B. Answers widely varied due to not many kids knowing how to use a conductivity meter (1pt)

C Circle one: **Ionic Covalent Metallic (1pt)

D EVIDENCE from lab to explain choice in (C) –ionic substances, when dissolved will conduct electricity (2pts) ½ points awarded for defining ionic as a metal and a nonmetal, but not as “metals conduct” (2pt)

E Circle one: **physical chemical (2pt, 1 for justify!)

–look for: no apparent change/new substance; the blue substance turned the liquid blue so no change; no temp change (anything that says the student knows physical from chemical changes based on observations)

F–looking for distillation or evaporation did not accept filtration, decantation or a chemical added (1pt)

Task 2: (18)

Step	Observations	Numerical Data
1	Metal was shiny, flexible, jagged/irregular shape... 1	NONE
2	NONE	Temperature: 20's C 1
4	Looking for: aluminum turned red/dark in places, felt warmer, bubbles (in some cases), liquid not as blue or different shade of blue Did not accept: rusted, eroded, ate/eaten, or dissolved 2	Temperature change? Yes 1
5	If they waited long enough the Al was gone, red solid on bottom (accepted dark), less foil, less blue 2	Temperature Something higher than in step 2 1

6. Answer the questions—only this page will be graded

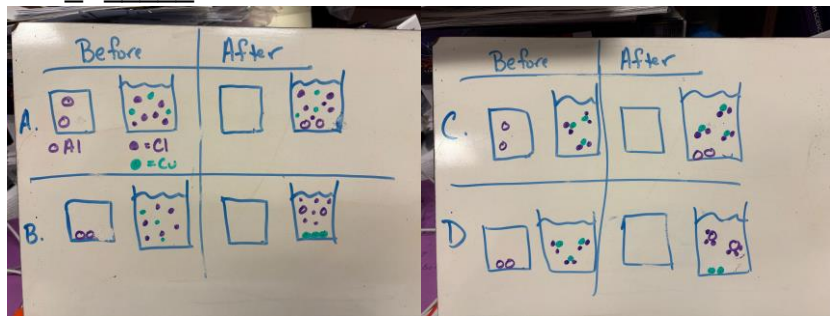
A. Circle One: physical **chemical 2

—justification included, change of color and temperature, a new solid formed, or the bubbles that did happen in some examples.

B. ** Yes No ** Exothermic Endothermic 2

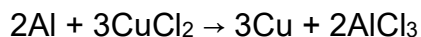
This answer was also data dependent—if they said it got colder, than endothermic was accepted, if they said no (and they had data to back that up) they got full credit, randomly circled answers with no data to back it up were not accepted.

C. B



Students should know that ionic compounds break into ions, so C and D are incorrect. Al is a solid so it should start on the bottom, and the product is Cu.

D. Even if they didn't choose the correct picture in (c) the balanced equation is there:



QUESTIONS Portion of the test: 60% (52pts)

#	Answer using the pictures provided	Pt value
1	C	1
2a Tiebreaker	Pic A - Jequirity Bean (<i>Abrus precatorius</i>) Pic B- Nightshade (<i>Atropa Belladonna</i>) Pic C- Foxglove (<i>digitalis purpurea</i>)	3
2b	A. Abrin B. Atropine C. Digitalis (cardiac glycosides or digitoxin)	3
2c	A. The bean B. Berry specifically, but all parts C. All parts	3
3.	Conotoxin, bioactive peptide ____C____ tetrodotoxin (TTX), a neurotoxin ____A____ alpha latrotoxin, a neurotoxin____B____	
4	A. YES NO B. YES NO C. YES NO D. YES NO E. YES NO The no's are copperheads, young copperheads mimic rattlers	
5	<i>Crotalus Horridus</i>	

Multiple Choice (2points each total 26 pts)

6. _C_

7. _C_

8. _B_

12. _B_

16. _D_

9. _C_

13. _A_

17. _B_

10. _C_

14. _C_

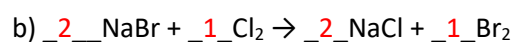
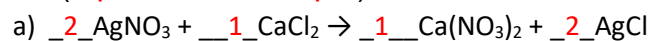
18. _D_

11. _A_

15. _C_

Short Answer

19. (2 pts each total 4pts)



20. (4pt) $\text{C}_2\text{H}_4 + 2\text{O}_2 \rightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$ ++note, I realized AFTER the printing that it should be 3O_2

a) combustion

b) 3 elements C, H and O

c) In the whole reaction AS WRITTEN: 22 atoms, if balanced, 24. Also accepted 12 if students corrected –because 12 atoms total will rearrange

d) 3 molecules on reactant AS WRITTEN, also accepted 4 for balanced and 2 for TYPES of molecule