

Potions and Poisons Test Key

Holt Division B Invitational 2018

Test Tie breakers in order:

Questions 33-42 (x/10), 31, 23, 24, 8, 19, 25, 43, 46, 54,
56

Scoring:

Since Test is 60% of the score and Lab is 40%, we had to make some adjustments to the raw scores. The test has 56 questions of equal weight, and the lab has a total of 40 points.

$$(\text{Test Score})(60/56) + (\text{Lab Score}) = \text{Total Score}$$

Test Scoring Key

| | | | |
|------------|------------|--------------------|------------|
| 1 B | 16 phys | 31 D | 46 C |
| 2 Ionic | 17 phys | 32 C | 47 B |
| 3 covalent | 18 false | 33 Toxicod rad | 48 C |
| 4 covalent | 19 false | 34 Toxicod div | 49 A |
| 5 Ionic | 20 true | 35 amanita phalloi | 50 82mL |
| 6 D | 21 A | 36 Datura sp | 51 Charlst |
| 7 XXX | 22 B | 37 podophyl peltat | 52 lead/Pb |
| 8 B | 23 Psn Ivy | 38 urtica ferox | 53 8.5m/s |
| 9 D | 24 B | 39 rhinella marina | 54 D |
| 10 A | 25 B | 40 taricha sp | 55 A |
| 11 B | 26 D | 41 loxosceles recl | 56 C |
| 12 C | 27 C or A | 42 androct austral | |
| 13 B | 28 D or A | 43 B | |
| 14 chem | 29 B | 44 A | |
| 15 phys | 30 A | 45 D | |

Potions and Poisons Lab - Holt Division B Invitational 2018 - LAB KEY

Solution A: $\frac{1}{4}$ distilled (5%) white vinegar and $\frac{3}{4}$ water.

Solutions B: Saturated baking soda and water solution, with a small amount of phenolphthalein (for an indicator) and Ethanol (to dissolve phenolphthalein).

B is basic and pink, while A is acidic and colorless. When mixed they produce bubbles and the pink becomes colorless.

Directions: You are being provided with 30 mL of two unknown solutions, labeled A and B. You are being asked to make some observations about the two solutions before mixing them together and making observations about the combination and any resulting changes that occur. **You are being asked to conduct four different types of tests** to help gather information about the chemicals given to you. You may use the items you bring with you in your kit. In the table below, **name each test and give a brief description of how you conducted the test.** Then include information you learned from the test in the three following columns. Goggles must be worn at all times while in the lab.

| Test and Description | Solution A | Solution B | Combined Solutions |
|--|------------|--|--------------------|
| EACH BOX OF THE TABLE IS WORTH 2 POINTS | | THESE BOXES FOR THE SOLUTIONS SHOULD BE FILLED WITH THE | |
| 1 POINT FOR VALID TEST 1POINT FOR A DESCRIPTION OF HOW THEY CONDUCT THE TEST/OBSERVATION OR WHAT IT IS FUNDAMENTALLY MEASURING. | | DATA OR OBSERVATIONS THEY COLLECTED USING THEIR VARIOUS TESTS LISTED IN THE LEFT COLUMN | |
| EXAMPLES TEST INCLUDE: COLOR APPEARANCE | | | |

| | | | |
|--|--|--|--|
| <p style="text-align: center;">SMELL pH TEMPERATURE CONDUCTIVITY VISCOSITY</p> | | | |
| <p style="text-align: center;">REACTIVITY</p> | | | |

Based on what you have observed and learned through testing, **what chemical(s) do you think each of the mystery solutions A & B could be?** Give a brief claim about what you think each solution is, then back up that claim with evidence you gathered to fill in the table on the previous page.

HERE I LOOKED FOR A CLAIM ABOUT WHAT THEY THOUGHT EACH SOLUTION IS OR WHAT THEY KNOW THEY CONCLUDE FROM THEIR TESTS ABOVE (1 point per A and B)

THEY SHOULD APPLY EVIDENCE FROM THEIR ABOVE TESTS OR OBSERVATIONS TO PROVIDE REASONING FOR THEIR CLAIMS ABOUT THE SOLUTIONS A & B (1 point per A and B)

Lastly, given what you found during your tests, and what you think each chemical is, **What do you think occurred when you mixed the two solutions together?** Back up your thoughts using reasoning based on your observations from the table on the previous page.

HERE THEY ARE EXPECTED TO MAKE A CLAIM ABOUT THE IDENTITY OF A+B OR MAKE CLAIMS ABOUT THE CHEMICAL RXN THAT OCCURED WHEN THEY MIXED THE TWO SOLUTIONS (2 points)

PROVIDE REASONING FOR THEIR CLAIM ABOUT A+B USING EVIDENCE FROM THEIR OBSERVATIONS / TESTS FROM THE PREVIOUS PAGE (2 points)