

SciOly.org Captain Tryouts 2017-2018

International Academy - Central, MI

FORENSICS

Name: _____

Score: _____/100

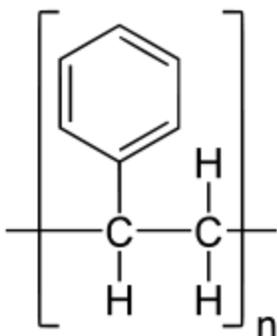
The test will be broken up into two sections: Knowledge & Analysis. The Knowledge section will be short answer and multiple choice. In the Analysis section, you will be presented with pre-tested evidence and asked to draw conclusions about the crime. This test will not include a lab portion as it is intended to be used for tryout purposes.

Please contact adams-boone.kathleen16@bloomfield.org with any questions.

KEY

KNOWLEDGE SECTION KEY

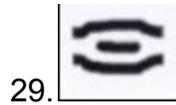
1. a) Boric acid/ H₃BO₄
b) Suspect B [*boric acid is an insecticide*]
2. a) Test with Benedict's solution
b) If sucrose: no rxn. If glucose: turn orange *1 pt for each listed compound, 1 for each reaction*
3. B
4. D
5. F
6. A
7. Polypropylene/PP (either is accepted)
8. Float
9. Float
10. Float
11. Polystyrene/PS (either is accepted)
- 12.



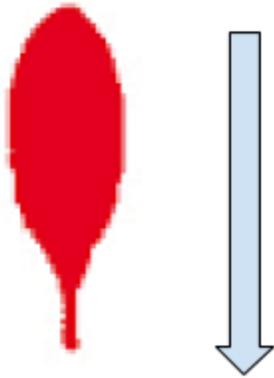
[(C₈H₈)_n] accepted for half credit.

13. a) HDPE/High density polyethylene
b) Low Density Polyethylene/LDPE
c) free radical addition (half points if they only say addition)
d) Ethylene
14. Cuticle
15. Cortex
16. Medulla
17. Ovoid body

18. Cortical fusi
19. Pigment granule
20. Human hair. Broken/fragmented medulla *1 for hair identification, 1 for identifying factor*
21. Cow hair. Unbroken medulla/ovoid bodies *1 for hair identification, 1 for identifying factor*
22. a) Cotton
b) Linen
c) Silk
23. Central pocket whorl
24. Tented arch
25. Ulnar loop



30. Ninhydrin fuming
31. a) $C_5H_5NO_2$
b) amino acids, fatty acids, AND proteins
32. Patent
33. Iodine fuming
34. Dusting and iodine fuming



35. a)
 b) 46.7 degrees
 c) 100+ ft/s OR 30.48+ m/s
36. Avian
37. a) Type O
 b) Type B
 c) Rhesus (factor). Half points for Rh (factor)
38. A-negative (half points if they only specify Type A)

ANALYSIS

39. Lucy Shale AND Jason Diorite. (2.5 points for each)
40. Powder Sample 1 indicates Jason (1) because it is ammonium chloride (2) which is found in volcanoes (2) and he just arrived home from a vacation in Hawaii, where there are volcanoes. Plastic 2 indicates Jason (1) because it is PVC/polyvinyl chloride (2) which is used to create wire insulation (2) and he is an electrician. The fingerprint found on the display case indicates Jason (1) because it is accidental whorl pattern (1)
- Powder Sample 2 indicates Lucy (1) because it is calcium sulfate (2) which is used to make tofu (2) and she is a vegetarian.
- Powder Sample 3 indicates Lucy (1) because it is NaCl (2) which is used in contact solution (2) and she wears contacts.
- Plastic 1 indicates Lucy (1) because it is PS/polystyrene (2) which is used in labware (2) and she is a chemistry teacher.
- The blood indicates Lucy (1) because it is type B-negative (2).
- Lucy has a motive because she is jealous of the gnome and wants it for herself (1) and Jason wants to stop losing competitions to the Gneiss's gnomes (1).

Although Powder Sample 4 indicates David (1) because it is sodium hydrogen carbonate (2) which is used in treating indigestion (2) and he has stomach problems, it could not have been him for lack of any other evidence indicating him and an overwhelming amount of evidence for

Lucy and Jason(1). Sodium hydrogen carbonate is found in many household items (2) and could have come from anywhere.

Although the fingerprint found on the doorknob indicates Linda (1) because it is a tented arch pattern (1), it could not have been her for lack of any other evidence indicating her and an overwhelming amount of evidence for Lucy and Jason (1).