

MY SO PRACTICE TEST

DIVISION C - HIGH SCHOOL, GRADES 9-12

PRACTICE TEST

Instructions

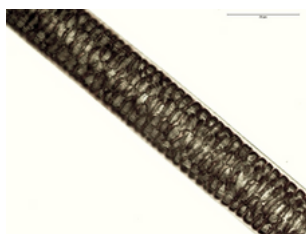
- You have 50 minutes to complete this test.
- You may write your answers directly in the test.
- You may use any notes or resources you have created or collected.
- You may use a calculator and scratch paper if necessary.
- Good Luck!

Test Questions

1. You perform a thin-layer chromatography analysis on an unknown using silica gel and heptane. Once it is complete, you find that your compound has a high R_f factor. Does this finding support the conclusion that your sample is polar?
 - a. Yes, because your sample has a high affinity for its mobile phase
 - b. Yes, because your sample has a high affinity for its stationary phase
 - c. No, because your sample has a high affinity for its mobile phase
 - d. No, because your sample has a high affinity for its stationary phase
2. Match the following compounds to the color they give off when burnt.

A. Sodium acetate	1. Golden yellow
B. Potassium chloride	2. Crimson red
C. Boric acid	3. Lavender purple
D. Lithium chloride	4. Bright green

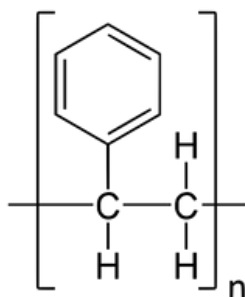
 - a. A-1, B-3, C-4, D-2
 - b. A-2, B-1, C-4, D-3
 - c. A-3, B-2, C-4, D-1
 - d. A-4, B-3, C-1, D-2
3. You find the following animal hair at your crime scene and observe it under a microscope. Identify the animal that this came from.
 - a. Bat
 - b. Cow
 - c. Dog
 - d. Squirrel



4. You are given two plastic samples. After some density testing, you determine that both FLOAT in saturated NaCl but SINK in 10% NaCl. Given this information, which of the following tests would NOT allow you to now conclusively differentiate between the two to identify them?
- Addition of acetone
 - Burn testing
 - Density testing with 25% NaCl
 - Transparency (shining light through)

5. An unknown polymer of density 0.925 g/mL would float in all of the following solutions EXCEPT:
- Corn oil
 - Distilled water
 - Isopropyl alcohol (~0.93 g/mL)
 - Saturated NaCl

6. The diagram below represents the chemical structure of the monomer whose repetition makes up which polymer?
- PC
 - PS
 - PVC
 - PETE



7. Hydrochloric acid reacts with which polyatomic anion in compounds to give off CO₂ gas and water?
- Acetate
Carbonate
Nitrate
Sulfate
8. Benedict's testing analyzes for the _____ in a compound.
- Ability to reduce other sugars
 - Presence of aldehydes vs. ketones
 - Presence of carbohydrates
 - Presence of starch
9. A _____ fiber would most resemble a human hair under a microscope.
- Cotton
 - Linen
 - Silk
 - Wool
10. Someone has stolen white printer paper from the office supply store during a rainy night. Fortunately, some of the pages fell out in the store as they tried to escape. You want to see if you can get photographs of possible fingerprints on the paper. What methodology should you follow?
- Photograph paper, no development needed
 - Apply a dark colored powder, then take a photograph
 - Apply a fluorescent colored powder, then take a photograph
 - Apply Ninhydrin, then take a photograph
 - Apply Small Particle Reagent, then take a photograph

11. What type of fingerprint is this?

- a. Accidental Whorl
- b. Central Pocket Loop
- c. Double Loop Whorl
- d. Plain Arch
- e. Plain Whorl
- f. Radial Loop
- g. Tented Arch
- h. Ulnar Loop



12. What type of fingerprint is this?

- a. Accidental Whorl
- b. Central Pocket Loop
- c. Double Loop Whorl
- d. Plain Arch
- e. Plain Whorl
- f. Radial Loop
- g. Tented Arch
- h. Ulnar Loop



13. What type of fingerprint is this?

- a. Accidental Whorl
- b. Central Pocket Loop
- c. Double Loop Whorl
- d. Plain Arch
- e. Plain Whorl
- f. Radial Loop
- g. Tented Arch
- h. Ulnar Loop



14. What type of fingerprint is this?

- a. Accidental Whorl
- b. Central Pocket Loop
- c. Double Loop Whorl
- d. Plain Arch
- e. Plain Whorl
- f. Radial Loop
- g. Tented Arch
- h. Ulnar Loop



15. A burn test is conducted on the sample. It burns a yellow color. When the flame is viewed again, this time through cobalt blue glass, the flame appears a more red - yellow color. What cation(s) corresponds to this?

- a. Calcium
- b. Sodium
- c. Potassium
- d. Both A and B
- e. Both B and C

16. Next, a solubility test is conducted. Virtually all of the sample dissolved. What could possibly be the identity of the majority component of the sample (which gives off the red-yellow color)?
- Calcium Nitrate
 - Calcium Sulfate
 - Potassium Chloride
 - Sodium Carbonate
17. What could be the minority component of the sample (the impurity)?
- Calcium Nitrate
 - Calcium Sulfate
 - Potassium Chloride
 - Sodium Carbonate
18. While you are investigating a crime scene, you notice a bright red flame is roaring in the distance. From this, what can you hypothesize about the flame?
- Boric acid is being consumed by a flame
 - Calcium metal is being consumed by the flame
 - Lithium metal is being consumed by the flame
 - Sodium metal is being consumed by the flame
19. While you continue to investigate the crime scene, you notice another flame roaring in the distance, this time yellow-red. From this, what can you hypothesize about the flame?
- Boric acid is being consumed by a flame
 - Calcium metal is being consumed by the flame
 - Lithium metal is being consumed by the flame
 - Sodium metal is being consumed by the flame
20. How does dusting for fingerprints work?
- Powder applied to prints sticks to fatty acids and lipids
 - Powder is hydrophilic and attracted to sweat left behind
 - Powder reacts with skin cells, causing them to stand out
 - None of the above
21. There are red fingerprints found on the wall made from blood. What type of prints are they classified as?
- Dusting
 - Impression
 - Latent
 - Visible print

This white powder must be dissolved in acetone prior to use.

- Cyanoacrylate fuming
- Ninhydrin
- Iodine fuming
- Small Particle Reagent

This process is the best way to develop prints on flexible, porous and non-porous surfaces.

- Cyanoacrylate fuming
- Iodine fuming
- Ninhydrin
- Small Particle Reagent

24. This process involves reacting a substance with traces of amino acids and fatty acids and proteins to produce a visible, sticky white material along a fingerprint's ridges.
- Cyanoacrylate fuming
 - Iodine fuming
 - Ninhydrin
 - Small Particle Reagent
25. This type of blood splatter appears as either a mist or fine spray of droplets between .1 and 1 mm in diameter.
- Low Velocity
 - Medium Velocity
 - High Velocity

ANSWER KEY

- | | | | |
|-----|----------|-----|----------|
| 1. | C | 15. | D |
| 2. | A | 16. | A |
| 3. | D | 17. | D |
| 4. | D | 18. | C |
| 5. | A | 19. | B |
| 6. | B | 20. | A |
| 7. | B | 21. | D |
| 8. | A | 22. | B |
| 9. | D | 23. | B |
| 10. | D | 24. | A |
| 11. | G | 25. | C |
| 12. | B | | |
| 13. | A | | |
| 14. | F | | |