

## Forensics Test Key, test written by Metea Valley High School

Total Score should be out of 100 points. Each problem is worth 1 point with all or nothing credit unless stated otherwise.

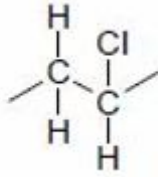
### **Part A: Qualitative Analysis (worth 20%)**

1. Glucose
2. 180 g/mol
3. Sodium Chloride
4. 58.5 g/mol
5. Sodium Bicarbonate
6. 84 g/mol
7. Sodium Acetate
8. 82 g/mol
9. Calcium Carbonate
10. 100 g/mol
11. Ammonium Chloride
12. 53.5 g/mol
13. Calcium Nitrate
14. 164 g/mol
15. Lithium Chloride
16. 42.4 g/mol
17. Red
18. Yellow
19. Purple/Pink
20. Blue-green

### **Part B: Polymers (worth 20%)**

1. Linen
2. Silk
3. Wool
4. Cotton
5. Cotton
6. Polyester
7. Wool
8. Silk
9. Linen

10. HDPE
11. PETE
12. PS
13. LDPE



- 14.
15. Horse
16. Dog
17. Cat
18. Bat
19. Keratin
20. Anagen, Catagen, Telogen

**Part C: Chromatography/Spectroscopy (worth 15%)**

1. 0.8
2. 0.6
3. 0.2
4. Retention factor **OR** Retardation factor
5. The paper
6. The solvent
7. Blue
8. Yellow
9. 4
10. Bromine
11. An odd number of Nitrogens
12.  $C_3H_9N$
13. 1 point for mentioning the creation of a molecular ion, 1 point for mentioning deflection through a magnetic field, 1 point for mentioning the mass to charge ratio creates a mass spectrum

**Part D: Physical Evidence (worth 15%)**

1. Jimmy Garoppolo
2. Tented Arch
3. Radial Loop
4. Double Loop Whorl
5. Plain Arch
6. Whorl

7. Crossover
8. Core
9. Bifurcation
10. Ridge Ending
11. Island
12. Delta
13. Pore
14. Cyanoacrylate Fuming
15. Ninhydrin

**Part E: Analysis of the Crime (worth 30%)**

10 points for correctly identifying the suspect: Jimmy Garoppolo

4 points for mentioning powders (Sodium Bicarbonate and Calcium Nitrate)

4 points for mentioning linen

4 points for mentioning PS plastic

4 points for mentioning dog hair

4 points for mentioning matching fingerprint