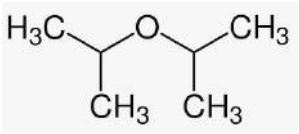
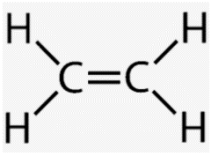
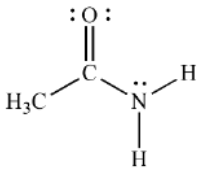
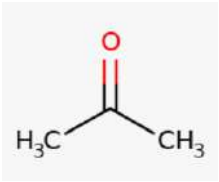
_____Name: _____ **Intro to Organic Chem and Intermolecular Forces Test**

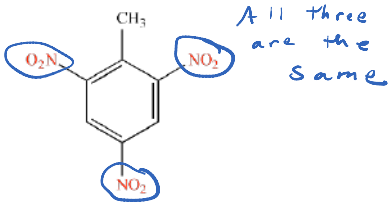
1. **Under each picture, please identify which category of compound each would be according to its functional groups. You may use your functional group sheet.** (18pts)

a 

b 

c 

d 

e 

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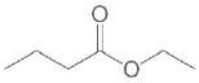
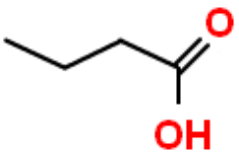
g 

h 

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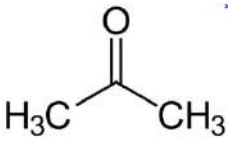
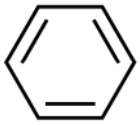
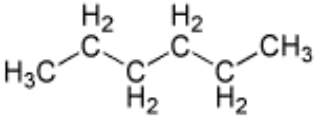
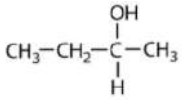
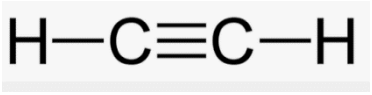
j 

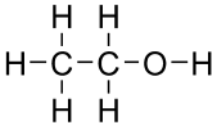
k 

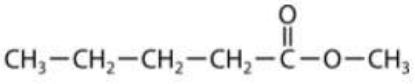
l 

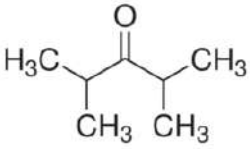
m 

n 

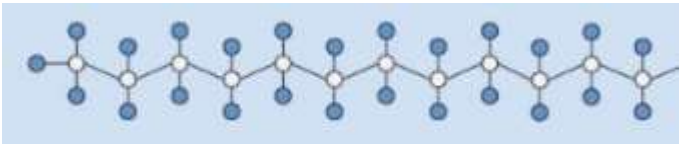
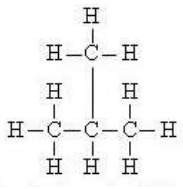
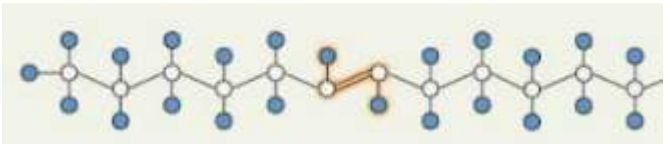
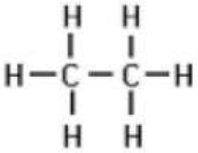
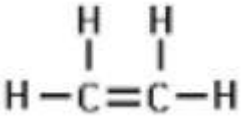
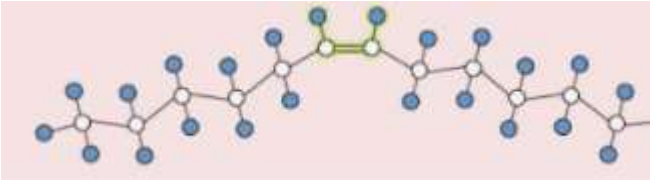
o $C_2H_5NH_2$

p 

q 

r 

_____Name: _____ **_Intro to Organic Chem and Intermolecular Forces Test**

s Saturated or Unsaturated 	T Saturated or Unsaturated 
U Saturated or Unsaturated 	V Saturated or Unsaturated 
W Saturated or Unsaturated 	X Saturated or Unsaturated 
Y Saturated or Unsaturated 	Z Saturated or Unsaturated 

2. (8pts) Categorize each of these as saturated or unsaturated hydrocarbon. Circle the correct answer.

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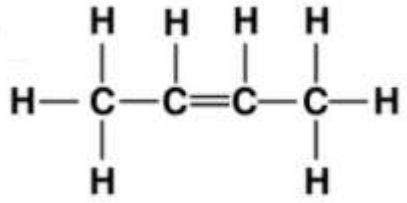
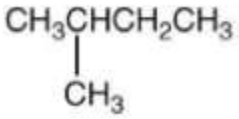
3. Complete the table for each of the following (6pts)

Structural	Condensed	Line
		
		
		

4. (2pts) What is a hydrogen bond?

5. (3pts) Illustrate hydrogen bonding between two water molecules. Include relative charges on the molecules.

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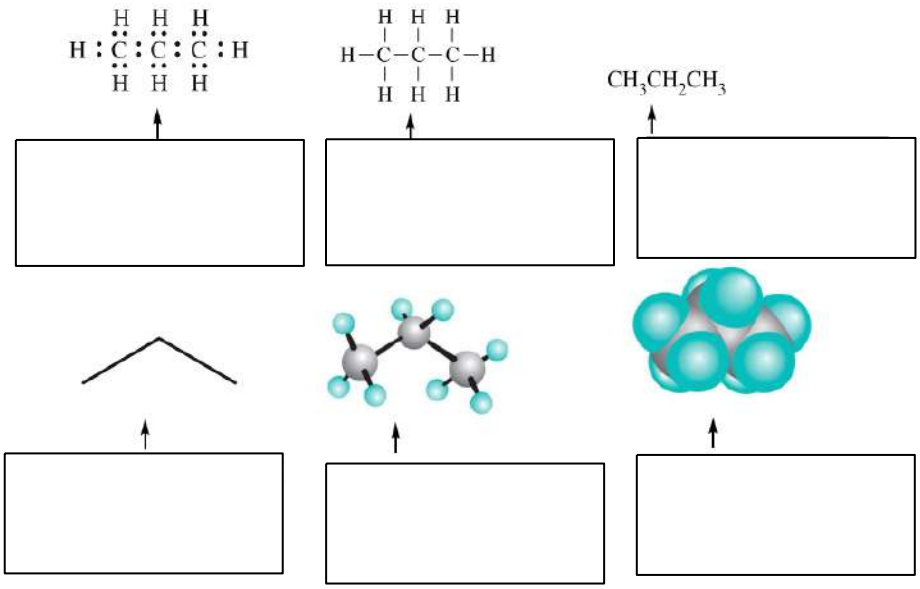
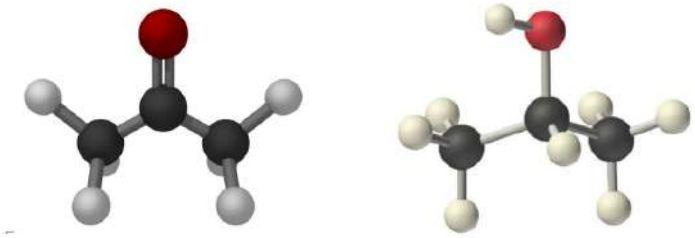
6. (6pts) On the following diagram, please label the different ways a compound can be represented: **Ball and stick model, condensed structural formula, Lewis structure, line structure, space-filling model, and structural formula.**



7. (4pts) Circle the molecule that will evaporate faster? What is your reasoning?



8. (2pts) Why does it makes sense that water has a slower evaporation rate than several alcohols that are much heavier?

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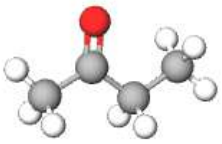
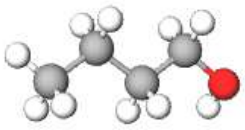
Part 2: Lab Simulation Question

2-butanol butanone 1-methyl-2-propanol 1-butanol



An experiment was done in which fabric covered temperature probes were placed in each of the substances mentioned above. The substances are represented in the models above. The liquid temperature was recorded. The temperature probes were removed from each liquid and the liquid was allowed to evaporate for several minutes. The final temperature changes were recorded, and Temperature Change (ΔT) for each were calculated after evaporation. **Nerdy Nelda Neutron got the probes mixed up, and didn't pay attention to which probe was in which liquid.** The results were as follows:

9. (8pts) Knowing that a larger change in temperature indicates a faster evaporation rate, fill in the blank for which of the three alcohols likely belongs to the temperature change. Then, indicate which functional group each molecule can be categorized as.

Unknown Substance	Temperature Change Results	Likely Substance Name	Functional Group Category?
1	ΔT = 20.2 °C		
2	ΔT = 11.7 °C		
3	ΔT = 7.7 °C		
4	ΔT = 3.8 °C		

10. (6pts) Explain your reasoning for **each** likely substance choice you made.

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Part 3: Other Questions

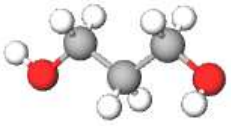
11. (2pts) Explain why carbon is such a unique element.

12. (2pts) Describe one example of how mastering carbon chemistry has shaped our lives. In other words, what new innovations have been created within the last century that we use on a daily basis?

13. (2pts) How are Van der Waals forces different than Dipole-Dipole forces? Which is stronger?

14. (2pts) What two things primarily effect the strength of Van der Waals forces between molecules?

15. Rank each of these from strongest intermolecular forces to weakest intermolecular forces? Explain your reasoning.



A

B

C

_____ stronger than _____ stronger than_____

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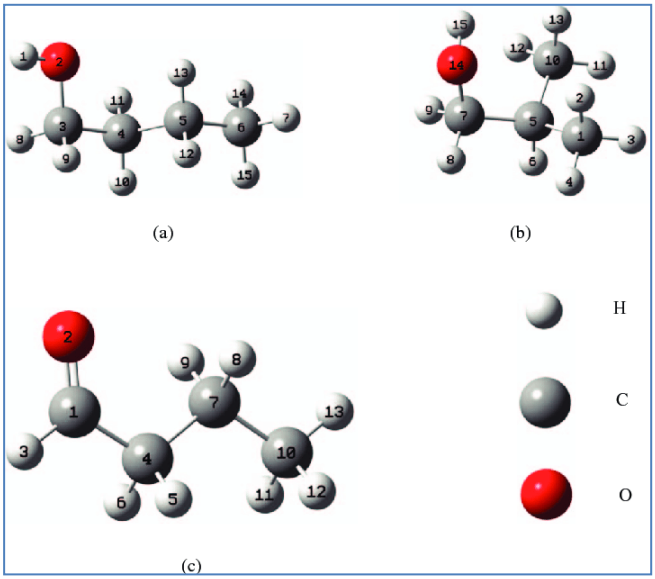
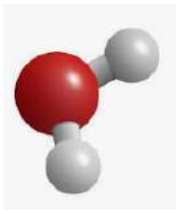
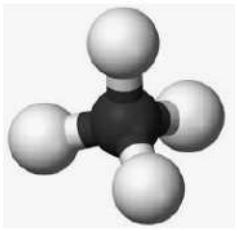
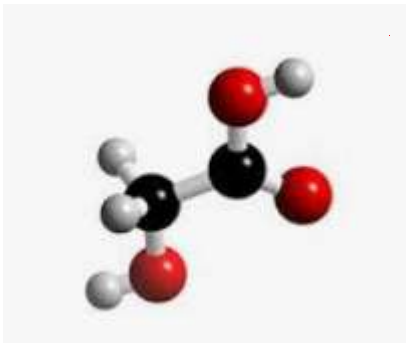
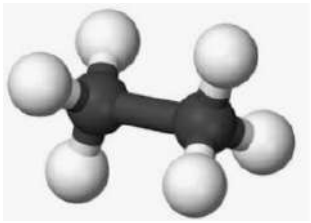
16. (5pts) Circle the molecules that are likely to exhibit hydrogen bonding.

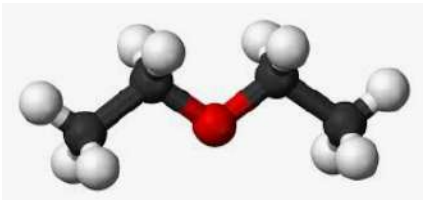












17. (1pt) What do all of the molecules likely to exhibit hydrogen bonding have in common?