

ASSIGNMENT

At the top of your assignment, please print “**T27 – States of Matter-2**”, your **LAST then First name, block and date**. Show all your work for questions requiring calculations; marks will not be awarded for final answers only. Complete these questions in the order given here. *[Marks indicated in italicized brackets.]*

1. Arrange the three states of matter in order of increasing strengths of forces between the particles. Explain your order using the shapes and volumes. *[3]*
2. Which state has the highest degree of disorder and which has the lowest? What does this suggest about the forces between the particles of each state? *[2]*
3. Use your understanding of the model of a gas to explain why gasses are compressible. *[1]*
4. Hydraulic devices, such as the break system of a car, have a piston at one end that pushes on a liquid connected by a hose to a piston at the other end. The entire system is closed.
 - a. What property of liquids allows this system to function correctly? *[2]*
 - b. Why is it dangerous if the break fluid leaks out and is replaced with air bubbles? *[2]*
5. Solids and liquids are often referred to as condensed states.
 - a. What empirical property is the same for these states? Explain. *[2]*
 - b. What empirical property is different for these states? Explain in terms of forces and motion. *[4]*
6. What properties of the gasses make an air bag useful as a safety device? Explain how each property applies the proper function of air bags. *[2]*
7. Compound A is formed when element $Z = 3$ bonds with element $Z = 9$. Compound B forms when element $Z = 7$ bonds with element $z = 9$.
 - a. Name the elements given in the above statement. *[1]*
 - b. Draw the electron dot diagrams for each element. *[2]*
 - c. Use the answers from 7b to draw the electron dot diagram and chemical formula for Compound A. *[2]*
 - d. Use the answers from 7b to draw the electron dot diagram and chemical formula for Compound B. *[2]*
 - e. What types of compounds are A and B? Justify. *[2]*
 - f. Compare the properties of compounds A and B. *[2]*

[29 marks in total]
