

Name: _____ Period: _____ Date: _____

CT Chemistry – Unit 9 Practice Test

_____/30 total

Matching: Match the description in Column B with the correct term in Column A. Write the letter in the blank provided. Each term matches with only one description, so be sure to choose the best description for each term. (1 pt each)

Column A

- G 1. Intermolecular forces
- C 2. Dispersion Forces
- A 3. Condensation
- E 4. Polar-Polar attraction
- F 5. Intramolecular forces
- B 6. Heat of fusion
- D 7. Heat vaporization
- I 8. Evaporation
- H 9. Hydrogen bonding

Column B

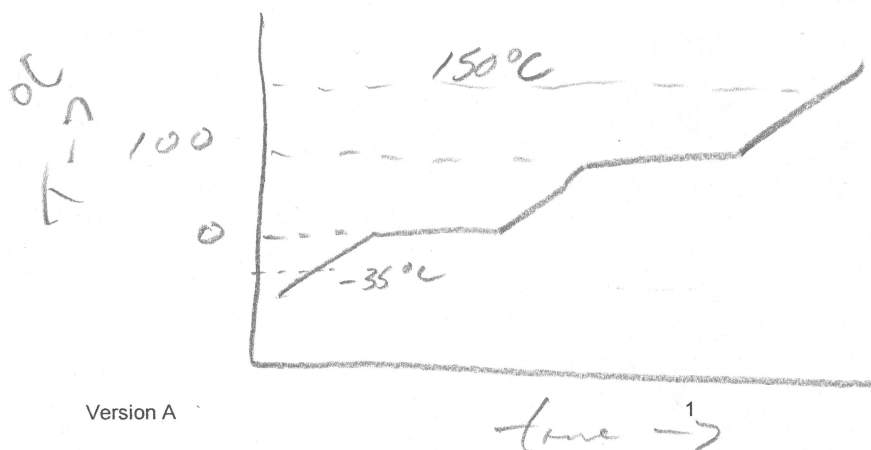
- A. Transition from vapor to liquid phase
- B. The energy required to melt one gram of a substance
- C. Intermolecular forces between 2 nonpolar molecules
- D. Energy required to change one gram of a liquid to vapor
- E. Attraction between polar molecules
- F. Chemical bonds within the atoms of a molecule
- G. General name for forces between molecules
- H. Strong polar to polar attraction between H and N, F, or O
- I. Transition from liquid to vapor phase

Multiple choice: (1pts each)

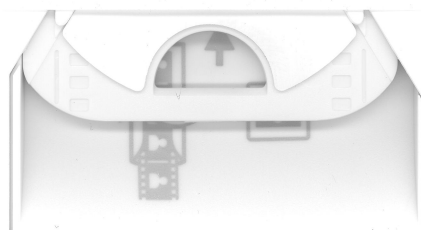
10. B or C The normal melting point of ice is
 a) 100°C b) 273K c) 32°F d) 0°F e) 100°F f) 212°C
11. C The escape of vapor molecules from the surface of a liquid is called.
 a) condensation b) boiling c) evaporation d) sublimation

Heating Cooling Curves:

Draw a heating curve for water -35.0°C to 150.0°C in the space below, label the significant temperatures: (Hint: It will be useful for the calculations) (4pts)



Version A



12. Calculate the heat energy in Joules required to raise the temperature of 236.04 g of ice from -35.0°C to the melting temperature 0.0°C (3 pts)

$$Q = mc_p \Delta T \leftarrow \text{Heating Ice}$$

$$\frac{236.04 \text{ g}}{1 \text{ g}^{\circ}\text{C}} \times \frac{2.06 \text{ J}}{\text{g}^{\circ}\text{C}} \times 35^{\circ}\text{C} = \boxed{17018 \text{ J}}$$

Specific Heat of Ice	2.06 J/g $^{\circ}\text{C}$
Specific Heat of Water	4.184 J/g $^{\circ}\text{C}$
Specific Heat of Steam	2.02 J/g $^{\circ}\text{C}$
Heat of Fusion	334 J/g
Heat of vaporization	2260. J/g

13. Continuing problem 12, calculate the heat energy the melt the ice to water. (3 pts)

$$Q = m H_f \leftarrow \text{melting Ice}$$

$$\frac{236.04 \text{ g}}{1 \text{ g}} \times \frac{334 \text{ J}}{\text{g}} = \boxed{78,837 \text{ J}}$$

14. Continuing problem 13, calculate the heat energy to raise the temperature of the water from freezing to boiling. (3pts)

$$Q = mc_p \Delta T \leftarrow \text{Heating water}$$

$$\frac{236.04 \text{ g}}{1 \text{ g}^{\circ}\text{C}} \times \frac{4.184 \text{ J}}{\text{g}^{\circ}\text{C}} \times 100^{\circ}\text{C} = \boxed{98,759 \text{ J}}$$

15. Continuing Problem 14, calculate the heat energy to boil all the water into steam at 150.0°C . (6pts)

$$Q = m H_v = \text{boiling water}$$

$$\frac{236.04 \text{ g}}{1 \text{ g}} \times \frac{2260. \text{ J}}{\text{g}} = \boxed{533,450 \text{ J}}$$

$$Q = mc_p \Delta T \leftarrow \text{Heating steam}$$

$$\frac{236.04 \text{ g}}{1 \text{ g}^{\circ}\text{C}} \times \frac{2.02 \text{ J}}{\text{g}^{\circ}\text{C}} \times 50^{\circ}\text{C} = \boxed{23,840 \text{ J}}$$

