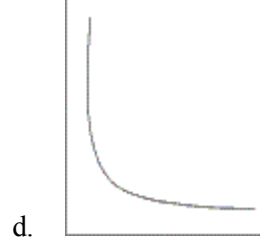
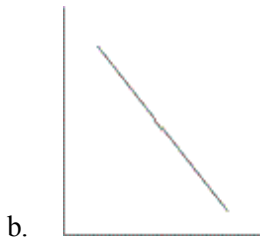
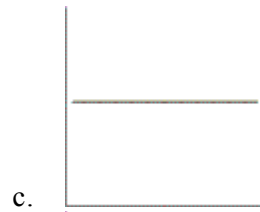
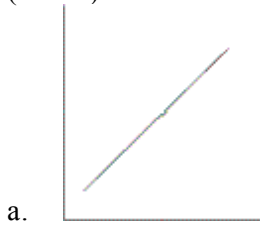


2nd Semester Chemistry-575 Final Exam Review**Multiple Choice**

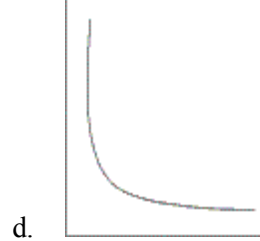
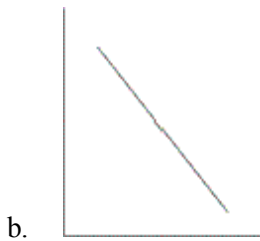
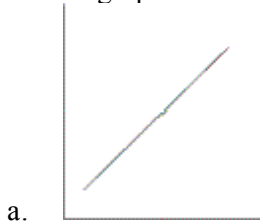
Identify the choice that best completes the statement or answers the question.

- _____ 1. How many moles of tungsten atoms are in 4.8×10^{25} atoms of tungsten?
a. 8.0×10^2 moles
b. 8.0×10^1 moles
c. 1.3×10^{-1} moles
d. 1.3×10^{-2} moles
- _____ 2. How many moles of FeO are needed to react completely with 1 mol of Al?
 $2\text{Al}(s) + 3\text{FeO}(s) \rightarrow 3\text{Fe}(s) + \text{Al}_2\text{O}_3(s)$
a. 1.0 mol
b. 1.5 mol
c. 2.0 mol
d. 3.0 mol
- _____ 3. Which of the following sets of empirical formula, molar mass, and molecular formula is correct?
a. CH, 78 g, $\text{C}_{13}\text{H}_{13}$
b. CH_4N , 90 g, $\text{C}_3\text{H}_{12}\text{N}_3$
c. CaO, 56 g, Ca_2O_2
d. $\text{C}_3\text{H}_8\text{O}$, 120 g, $\text{C}_3\text{H}_8\text{O}_2$
- _____ 4. The combined gas law is written
a. $P_1V_1/T_1 = P_2V_2/T_2$
b. $P_1T_1/V_1 = P_1T_2/V_2$
c. $P_1V_1T_1 = P_2V_2T_2$
d. $T_1V_1/P_1 = T_2V_2/P_2$
- _____ 5. If a balloon containing 3000 L of gas at 39°C and 99 kPa rises to an altitude where the pressure is 45.5 kPa and the temperature is 16°C , the volume of the balloon under these new conditions would be calculated using the following conversion factor ratios: _____.
a. 2678 L
b. 1489 L
c. 6046 L
d. 3361 L
- _____ 6. How is the ideal gas law usually written?
a. $\frac{PV}{nT} = R$
b. $\frac{PV}{T} = nR$
c. $PV = nRT$
d. $P = \frac{nRT}{V}$
- _____ 7. A sample of 0.50 moles of neon gas has a pressure of 120 kPa at 20 deg C. What volume does this gas occupy? ($R=8.31$ kPa-L/mol-K)
a. 0.69 L
b. 2.3 L
c. 5.2 L
d. 10.1 L

_____ 8. Which of the following graphs best represents the relationship between volume (y-axis) and temperature (x-axis)? Assume the pressure is held constant.



_____ 9. Which graph correctly represents the relationship of pressure (y-axis) vs. Kelvin temperature (x-axis)?



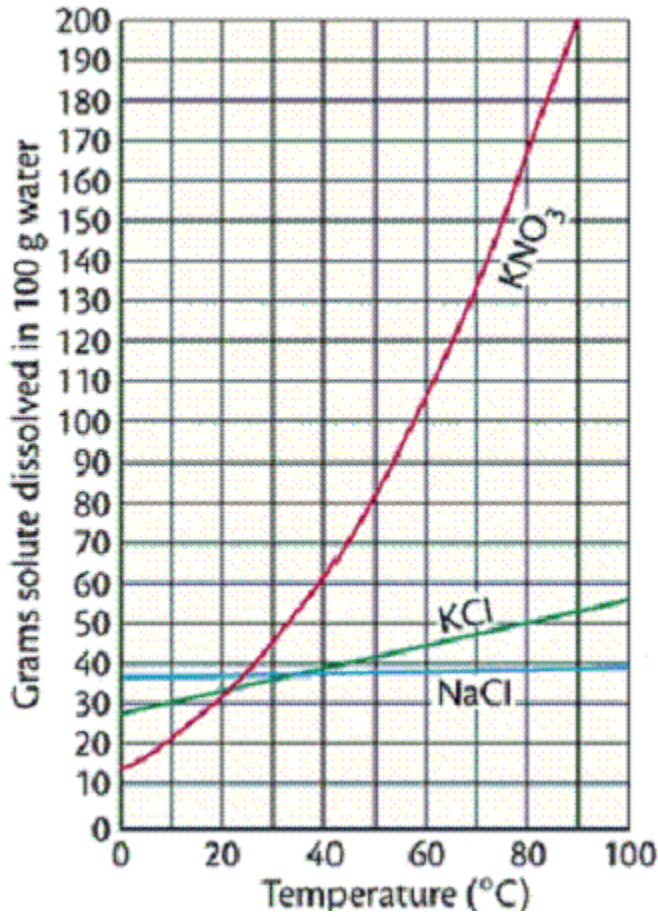
_____ 10. What instrument is normally used to measure atmospheric pressure?

- a. thermometer
- b. barometer
- c. vacuum
- d. manometer

_____ 11. Cloudy weather usually occurs under low pressure weather systems. When low pressure moves into an area, you would expect the level of mercury in a barometer to

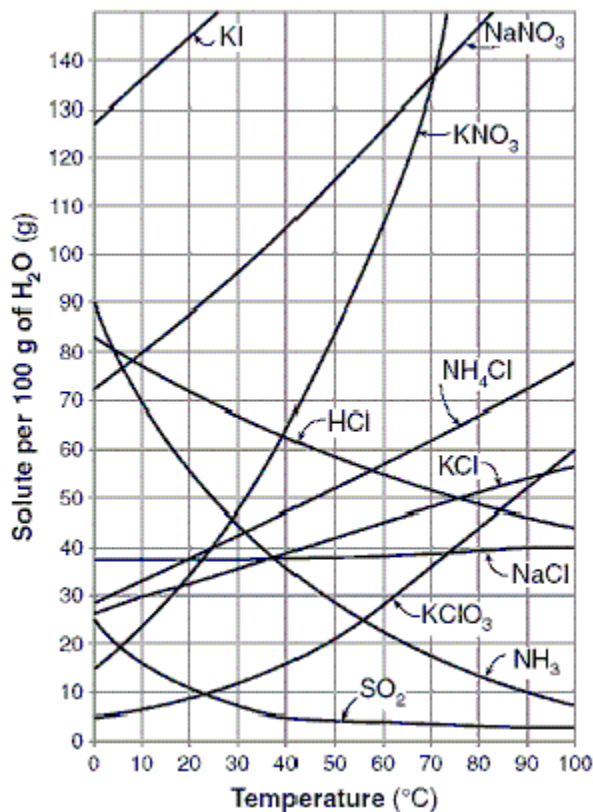
- a. rise
- b. fall
- c. stay constant
- d. rise, fall, then rise again

Figure 4B-2

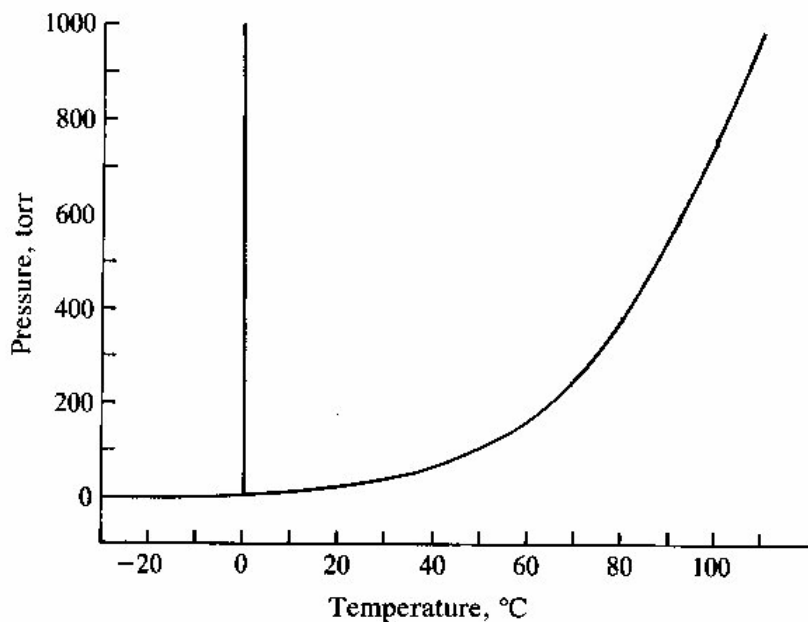


- _____ 12. (Use Figure 4B-2.) Which substance has the lowest solubility at 0°C?
- a. KNO₃
 - b. KCl
 - c. NaCl

Figure 4B-3

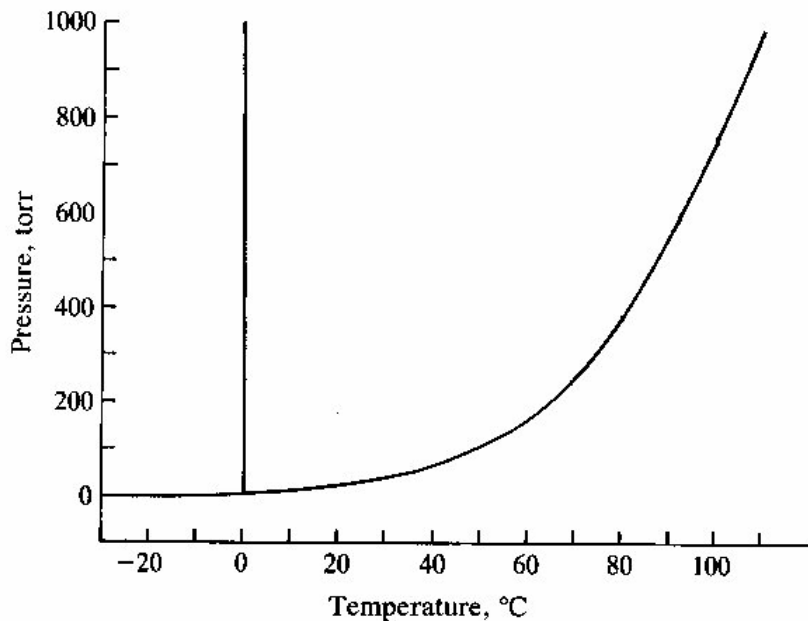


- _____ 13. (Use Figure 4B-3.) A solution that contains 80 grams COMPLETELY DISSOLVED of NH₄Cl in 100 grams of water at 40°C is
- unsaturated.
 - saturated.
 - supersaturated.
- _____ 14. Which type of solute will dissolve in the non-polar solvent, hexane?
- nonpolar
 - polar
 - ionic
 - metal
- _____ 15. What is the molarity of a solution that contains 6 moles of solute in 2 liters of solution?
- 6M
 - 12M
 - 7M
 - 3M
- _____ 16. What is the molarity of a solution containing 56 grams of solute in 959 mL of solution? (molar mass of solute = 26 g/mol)
- 1.5 M
 - 2.2 M
 - 2.1 M
 - 0.0022 M



17.

- If a sample is at 400 torr of pressure and a temperature of -10 degrees, the sample would be a
- a. solid
 - b. liquid
 - c. gas
 - d. plasma

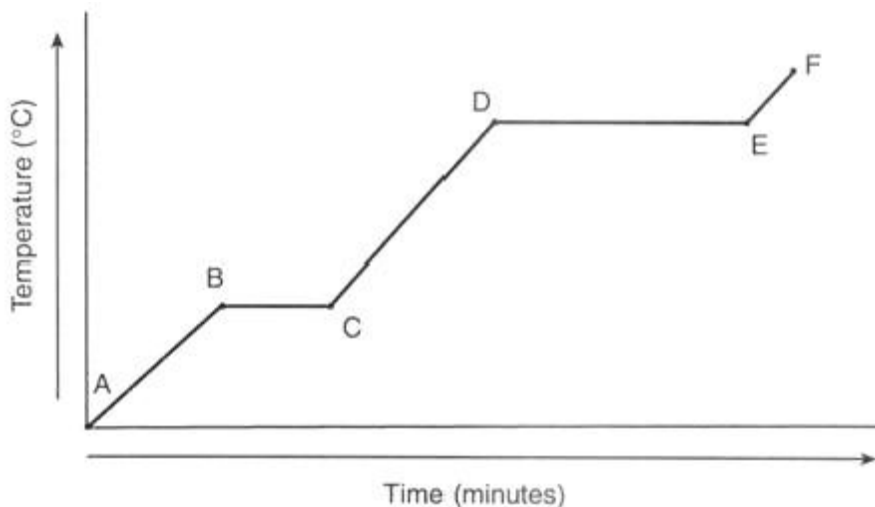


18.

- If a sample is at 200 torr of pressure and a temperature of 40 degrees C is heated to 100 deg C, the sample would
- a. freeze
 - b. melt
 - c. condense
 - d. boil

- _____ 19. What is the amount of heat required to raise the temperature of 200.0 g of aluminum by 10°C? (specific heat of aluminum = $0.21 \frac{\text{cal}}{\text{g}^\circ\text{C}}$)
- a. 420 cal
b. 4200 cal
c. 42,000 cal
d. 420,000 cal
- _____ 20. A 312 gram sample of lead absorbs 1500 joules of energy. What will be the change in temperature? (Specific heat of lead = 0.13 J/g deg C)
- a. 0.62 °C
b. 12 °C
c. 37 °C
d. 61,000 °C
- _____ 21. Which statement below describes the energy flow in the following phase changes?
Example A: Solid ice changing into liquid water
Example B: Water vapor changing into liquid water
- a. Example A: The solid ice absorbs energy from the surroundings
b. Example B: The water vapor absorbs energy from the surroundings
c. Example A: The solid ice releases energy to the surroundings
d. Energy is not transferred during phase changes
- _____ 22. Classify the chemical reaction below:
- $$2\text{Cl}_2(\text{g}) + 7\text{O}_2(\text{g}) + 130 \text{ kcal} \rightarrow 2\text{Cl}_2\text{O}_7(\text{g})$$
- a. endothermic
b. exothermic
c. energy neutral
d. both endo and exothermic

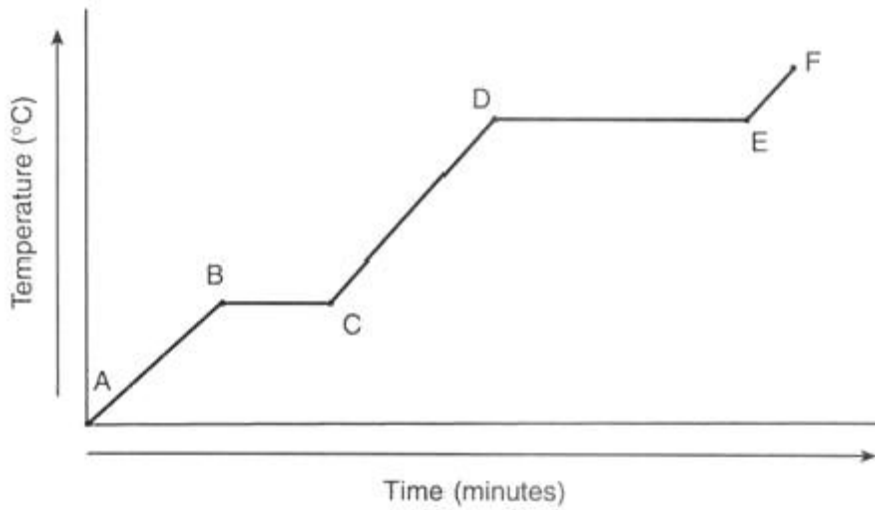
_____ 23.



What section of the graph shows the sample boiling?

- a. a-b
b. b-c
c. c-d
d. d-e

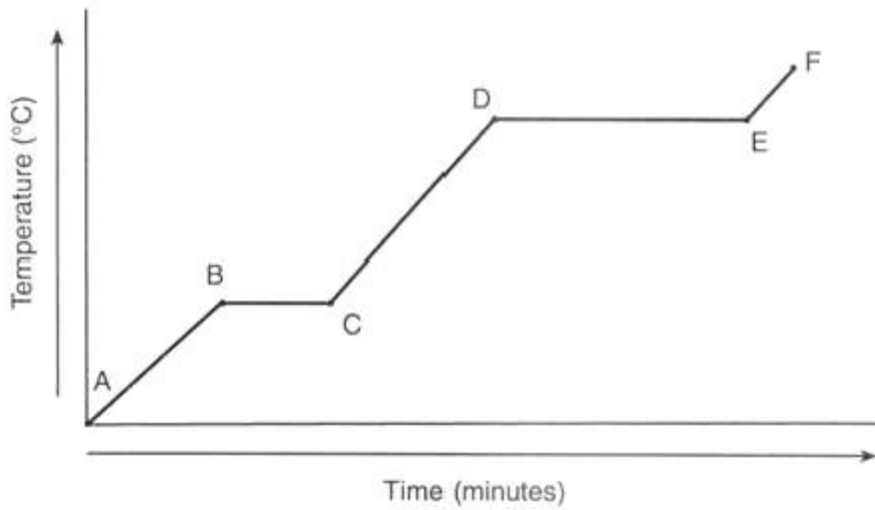
24.



What section of the graph can both liquid and solid exist at the same time?

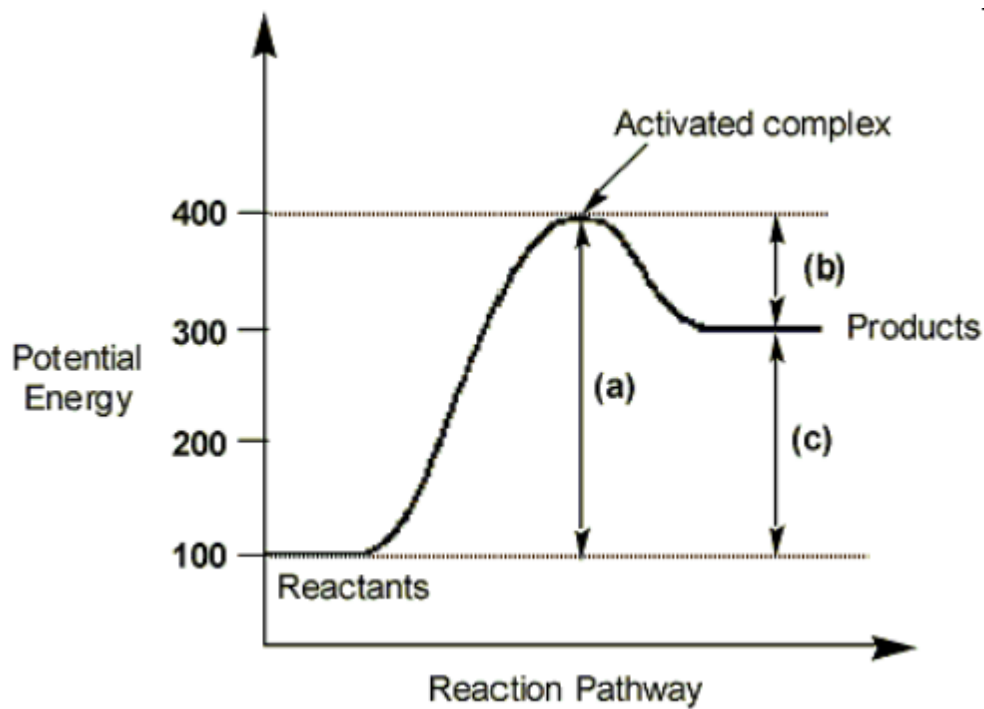
- a. a-b
- b. b-c
- c. c-d
- d. d-e

25.



In what section of the graph is the potential energy of the sample increasing?

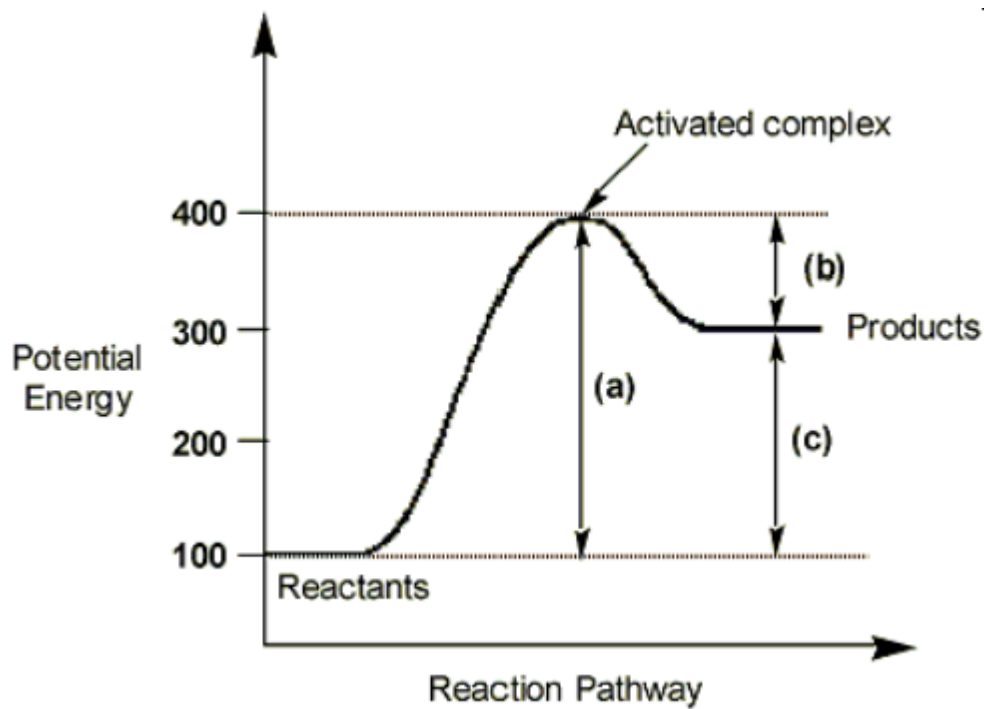
- a. a-b
- b. b-c
- c. c-d
- d. e-f



26. _____

Would this reaction be classified as endothermic or exothermic?

- | | |
|----------------|--------------------------------------|
| a. endothermic | c. neither endothermic or exothermic |
| b. exothermic | d. neutral |



27. _____

What is the change in potential energy (Heat of reaction ΔH) for the forward reaction?

- | | |
|---------|---------|
| a. +100 | c. -100 |
| b. +200 | d. -200 |

