For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

[REDACTED]

a. Draw the Lewis dot structure for .... Include a description of:
    i.   Shape
    ii.   Polarity
    iii. Hybridization
    iv.   Sigma and Pi bonding
    v.   Resonance structures

Assuming that this reaction occurs in a [REDACTED] *L reactor at 25 C which is charged to* [REDACTED] *atm with* [REDACTED] *is added until the total pressure becomes* [REDACTED] *atm. Assume the pressure remains 25 C. It is then heated to allow the reaction to begin.*

b. Write the reaction and balance it. [REDACTED] [REDACTED] You can use you knowledge of chemical names to determine the others.   Include in your reaction the phases of each (s) (g) (l) and (aq).

c. Find the amounts of both gases present before the reaction begins and use these to determine which reactant is limiting and which is in excess.

    i.   Use the ideal gas law PV = nRT and use the value of R in atm units . R=0.082 (Liter-atm)/(mole-K)

d. Find the maximum amount of . [REDACTED] .which could be produced by this reaction.

For each problem, write out a logical, legible and well ordered solution which is labeled with units and
shows clearly what you are doing to solve the problem.

2) In an acid – base titration, █████████ solution is tested for concentration by
titration against solid potassium hydrogen phthalate- a monoprotic acid. (KHP
FW=204.23)

A lab student measures out .█████ of the █████ and puts it into █████ mL of solution.
It is mixed until it dissolves. Thymolphthalien drops are added as an indictator.

The student then measures out █████ ml of █████ to neutralize the KHP

a) Write the reaction of acid and base and balance it

b) Find the number of moles of KHP used in the reaction

c) Determine the number of moles of base that were used to neutralize the KHP

d) Find the concentration of the base solution.

For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

3) When, ▮ mL of ▮ M ▮ is mixed with ▮ mL of ▮ M ▮ solution, a precipitate forms.

    a. Write this reaction in net ionic form

    b. Find the number of moles of each reactant

    c. Determine which reactant is limiting

    d. Find the number of moles of precipitate forming

    e. Find the mass of the precipitate which forms.

For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

4) When ▮▮▮▮ mL of ▮▮▮▮ M ▮▮▮▮▮▮ and ▮▮▮▮▮ g ▮▮▮▮▮. are mixed together, the following reaction occurs:

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

    a. Identify the oxidation numbers that change on the reaction

    b. redox balance this reaction in acid show all necessary steps including half reaction.

    c. Find the number of moles of each reactant and determine which one limits the reaction

For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

5) ████████ g ████████████ is reacted completely with ████████████████ in a students lab. If the ████████████ gas produced is collected in a graduated cylinder over water at ██████████ C in a room where the pressure is ████████ mmHg:

   a. Write and balance the reaction, which occurs.

   b. Find the number of moles of ████████████ gas which will be produced. Make sure you show how you are finding this.

   c. Find the volume of ████████ gas you would expect to collect.

For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

6) Use Hess's law to find the enthalpy change for the reaction, which produces the ████████████████████ The fact that there are 5 reactions below does not mean you will need all █ of them.

████████████████████████████

████████████ ΔH =. ████   KJ
████████████ ΔH = ████ KJ
████████████ ΔH = ████ KJ
████████████ ΔH = ████ KJ
████████████ ΔH = ████ KJ

For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

7) Propene burns in oxygen to form carbon dioxide and water according to the reaction below:

████████████████████████████████████

a. Draw the Lewis dot structure for ███████ Include a description of:
  i. Shape
  ii. Polarity
  iii. Hybridization
  iv. Sigma and Pi bonding

b. Use your reference tables to find ΔH for the reaction.

c. Is the reaction exothermic or endothermic?

For each problem, write out a logical, legible and well ordered solution which is labeled with units and shows clearly what you are doing to solve the problem.

8) For each of the molecules listed below,
   a. Describe the primary forces that hold them in the solid phase.
   b. Order #2, #9 and # 8 for highest boiling point
   c. Order #1, #2 and #4 for highest vapor pressure at room temp
   d. Order #5, #10 and #6 for lowest melting point

#	particle	description of forces:
1	■■■■	
2	■■■■	
3	■■■■	
4	■■■■	
5	■■■■	
6	■■■■	
7	■■■■	
8	■■■■	
9	■■■■	
10	■■■■	