Philosophy 211 –- Assignment #1

I. Provide a construction tree for each of the following sentences; circle the main connective.

1. ((~P v Q) & R) → P
2. ~(~P & Q) v (R → P)
3. ~(~(~P → R) → P)
4. ((P → R) → R) → (R v P)

5. (P → ~(~S v R)) → ~(R → ~S)
6. ~(~P & ~Q) → (P v Q)
7. (P → (P → P)) → ((P → P) → P)
8. (~Q → Q) v (Q → ~Q)

II. Paraphrase these English sentences into the notation of sentential logic. Indicate which letters represent which sentences.

1. Neither Bill nor Alice attended the meeting.
2. Bill and Alice will attend the meeting if Tom doesn't attend.
3. Alice will attend the meeting only if Mary attends.
4. At least two of Mary, Tom, and Alice attended the meeting.

III. Which of the following are satisfactory representations in sentential logic of the following English sentence?
    Tom won't attend unless both Bill and Mary attend.

    A.   ~(B v M) → ~T
    B.   T → (B & M)
    C.   (~B & ~M) → ~T
    D.   T → (B v M)
    E.   ~T → (B & M)
    F.   (~B v ~M) → ~T

IV. In a certain place, all the inhabitants are either Knights or Knaves. Knights always tell the truth and Knaves never tell the truth. You meet two inhabitants, A and B. B says "Both of us are Knaves." (Treat this as a single statement, which is either true or false.) Determine whether A and B are Knights or Knaves. (They need not be the same.) Explain your reasoning.