Class 2 Handout

I. Translate the following to propositional logic. Use A: You join me; B: I go to the movies.

1. If you join me, then I go to the movies.   1. If A then B
2. You join me if I go to the movies.   2. If B then A
3. You join me only if (only when) I go to the movies.   3. A only if (only when) B
4. Your joining me is a necessary condition for my going.   4. A is necessary for B
5. Your joining me is a sufficient condition for my going. 5. A is sufficient for B
6. A necessary condition of your joining me is my going.   6. B is necessary for A
7. A sufficient condition for your joining me is my going. 7. B is sufficient for A
8. Your joining me entails (implies) that I go to the movies. 8. A entails (implies) B
9. You join me given (provided, on the condition) that I go. 9. A given B

II. Exercises A: Use obvious letters to translate the following into propositional logic.

1. Alvin doesn't like sports.
2. Bert and Ernie are muppets.
3. Claudia wants to surf or snorkel.
4. Dogs bite just in case they are startled.
5. Everyone loves logic, or not.
6. If Flora wants candy, Geronimo will get her some.
7. Harold is generous unless his wife is listening.
8. Toyota opens a new plant only if Honda initiates an ad campaign.

III. Exercises B. Are the following formulas wffs? If so, which connective is the main connective?

1. $(P \lor Q) \supset {\sim}R$
2. ${\sim}X(Y \lor Z)$
3. $(S \lor T \cdot U) \supset S$
4. ${\sim}(G \supset H)$
5. ${\sim}\{(P \supset Q) \cdot [P \equiv {\sim}(Q \lor R)]\}$
6. ${\sim}[A \cdot (B \lor C)] \equiv [(A \cdot B) \lor (A \cdot C)]$
7. $[(D \cdot E) \lor F] \cdot G$

IV. Exercises C. Translate these sentences to propositional logic, using obvious letters:

1. Ford introduces a new model and either Chrysler raises prices or General Motors changes colors.
2. Both Toyota does not open a new plant and Ford does not introduce a new model.
3. Honda initiates an ad campaign if and only if Chrysler raises prices.
4. Either Saab increases salaries and Toyota opens a new plant or Honda initiates an ad campaign and General Motors changes colors.
5. Toyota's opening a new plant is a necessary condition for General Motors' changing colors, and Ford's introducing a new model is a sufficient condition for Chrysler's raising prices.
6. If Saab increases salaries, then if Toyota opens a new plant, then Honda initiates an ad campaign.
7. Audi lays off workers; however, if Chrysler raises prices then either General Motors does not change colors or Ford does not introduce a new model.

V. Translation from logic to English

Use the following key:
        A: Bob owns an Audi
        B: Bob owns a BMW
        C: Bob owns a car
        D: Bob drives
        E: Ethel owns a BMW
        F: Fred owns a BMW

Translate into English
        B · ~(E ∨ F)
        D ≡ C

VI. Exercises D. Using the above key, translate each of the following sentences into English.

        1. C ⊃ (A ∨ B)
        2. E · ~F
        3. ~A ⊃ (~D ∨ B)
        4. ~ (A ∨ B) ⊃ ~C
        5. ~(A · B) · C
        6. (F · E) ≡ ~B