**Logic Exercises 6: Truth-Table Analysis**

**For each of the following, first, translate the passage into propositional logic, then using a truth-table answer the question.**

1. Are the following two statements logically consistent, logically equivalent?

1. If Diego does not go to school, then Clara will go to the park.
2. If Clara does not go to the park, then Diego will go to school.

2. Are the following statements logically consistent, logically equivalent?

1. Neither Raj nor Maria will win the race.
2. It is not the case that both Raj and Maria will win the race.

3. What kind of truth-profile do the following statements have?

1. Tatiana won’t go to the park only if Tatiana will go to the park.
2. Nancy will join the soccer team if and only if Reba does not.

4. Is the following argument valid or invalid?

Korea will invade Russia only if India will go to war with Pakistan.

India will not go to war with Pakistan.

So, Korea will invade Russia.

5. Is the following argument valid?

Either government taxes will go up or inflation will go up.

Inflation will not go up.

So, government taxes will go up.

6. Are the following statements contingent, logically equivalent, or consistent?

1. Ariel published a book and Manny did not write a novel.
2. If Manny did not write a novel, then Ariel did publish a book.
3. Either Ariel published a book or Manny did not write a novel.

7. Is the following argument valid?

France will go to war with Italy only if India and Japan both invade Russia.

France will go to war with Italy.

So, Japan will invade Russia.

8. Are the following statements logically equivalent?

1. John is not tall.
2. Either John is not tall or Jane is short.

9. Is the following statement a tautology?

1. Either it is not the case that Vanessa will not go to school or Vanessa will not go to school.

10. Is the following argument valid?

Samantha will buy house only if Raj buys a car.

Raj will buy a car only if Carlos buys a motorcycle.

Carlos will not buy a motorcycle.

So, Samantha will not buy a house.