**Different terminologies to express**

“If , then ” “ implies ” “ onlyif ” “If , ” “ is sufficient for ” “a sufficient condition for is ” “ if ” “ when ” ( “ whenever ” “ is necessary for ” “a necessary condition for is ” “ follows from ” “ unless ”

**Practice Problems**

1. “Tom is a math major, but not a computer science major”- Negate the statement.

**2. Give logical expression for the following statements.**

Let be the statements – John is healthy. John is wealthy. John is wise. John is healthy and wealthy, but not wise.

John is not healthy, but wealthy and wise.

John is neither healthy nor wealthy nor wise.

Let be the statements – Fox can catch the hare. Lynx can catch the hare. The hare is alert. s The hare is quick.

If the hare is alert and quick neither fox nor lynx can catch it.

Let be the statements – Stay at hotel. Watch movie. Go to museum. s Spend time there.

Either stay at hotel and watch movie or go to museum and spend time there.

Let be the statements – You can access internet from campus. You are a computer science major. You are a fresh man.

You can access internet from campus onlyif you are a computer science major and not a fresh man.

You can not ride the rollercoaster if you are not under feet tall or you are older than years.

Let be the statements – You get an A on the final exam. You do every exercise in this book. You get an A in this class.

You get an A in this class, but you do not do every exercise in this book.

You get an A on the final, you do every exercise in this book and you get an A in this class.

To get an A in this class, it is necessary for you get an A on the final.

You get an A on the final, but you do not do every exercise in this book ; nevertheless, you get an A in this class.

Getting an A on the final and doing every exercise in this book is sufficient for getting an A in this class.

You will get an A in this class if and only if you either do every exercise in this book or you get an A on the final.

**3. Use De – Morgan’s laws to find the negation of each of the following statements.**

Jan is rich and happy. Carlos will bicycle or run tomorrow. Mary walks or takes the bus to school. Isha is smart and hardworking.

**4. Write the inverse, converse, contrapositive and negation of the following statements.**

If we are on a vacation, we go fishing.

If it is Thursday, then I have a test today.

I come to class whenever there is going to be a quiz.

A positive integer is a prime if and only if it has no divisor other than and itself.