Semester II (Hons.) – [Western Logic –II]

- **Need for Quantification Theory:**

Many valid deductive arguments cannot be tested using the logical techniques of the propositional logic. Therefore we must now enhance our analytical tools. We do this with quantification. Techniques of Propositional logic can test deductive arguments effectively but only arguments of one certain type, those whose validity depends entirely on the ways in which simple statements are truth functionally combined into compound statements. But when we confront arguments built of propositions that are not compound, however, those techniques are not adequate; they cannot reach the critical elements in the reasoning process. For example,

All humans are mortal
Socrates is Human
Therefore Socrates is mortal.

This argument is obviously valid. But if we symbolize it according to propositional logic it will be appear as invalid, because the inner logical structure of that argument cannot be revealed by the techniques of propositional logic.

Quantification enables us to interpret noncompound statements without loss of meaning.

- **Affirmative Singular Proposition:** An affirmative singular proposition assrts that a particulat individual has some specified attribute.

Example: ‘Socrates is human’.

- **Individual Constant:** A symbol used in logical notation to denote an individual.

Example: a, b, c, d ,……w.

- **Individual variable:** a symbol that serves as a placeholder for an individual constant.

Example: x, y, z.

- **Propositional function:** Propositional function contains a predicate symbol and an individual variable.

Example: Fx, Gy, etc.

- **Reference:**
Copi, I.M. , Chen, C. , Rodych, V. (2019). Introduction to Logic. 15th Edition Reprint 2020. Routledge.

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