**VNR VIGNANA JYOTHI INSTITUTE OF ENGINEERING & TECHNOLOGY**

**B.Tech. I Year I Semester – CSE-D**

**MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE- 18PC1CS01**

***Why am I Learning, What I am Learning***

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| **Roll.No** | **Name** | **Unit – 1 - Mathematical Logic & Predicates** |
| 18071A05P0 | P.SRAVANTH | Statements and notations, Connectives, Well-formed formulas, Truth Tables, tautology, equivalence implication, Normal forms, Rules of inference, Consistency, proof of contradiction, Automatic Theorem Proving. Quantifiers, Predicative logic, Free & Bound variables. |
| 18071A05P1 | P.VASAVI |
| 18071A05P2 | P.KARTHIK |
| 18071A05P3 | SINDHUJA PONNURU |
| 18071A05P4 | PRANAVI |
| 19075A05P5 | YASHASWI |
| **What did you learn from this unit** | | |
| The fundamentals that we have learnt through this unit are:   * Statements and notations * Connectives * Truth Tables * Normal forms * Rules of inference * **Predicates:** Quantifiers, Predicative logic, Free & Bound variables.   We learnt about mathematical logic of truth and false and equivalence and also implications of logic making . | | |
| **Was the application illustrated, clear for understanding the topics covered in this unit** | | |
| All the concepts of the unit are illustrated clearly by the means of the general application-  “**AIRLINE MANAGING SYSTEMS**”.  Whole concept of the unit is clearly explained by functionality of ***search*** button.  The moment we enter the inputs and execute the search operations internally all the search is done based on the truth table all the operations are performaed and only those results are produced which produce truth table as tautology. | | |
| **Identify an application, to relate to the content learnt and explain**  Mathematical logic was devised to formalize precise facts and correct reasoning. Its founders, Leibniz, Boole and Frege, hoped to use it for common sense facts and reasoning, not realizing that the imprecision of concepts used in common sense language was often a necessary feature and not always a bug. The biggest success of mathematical logic was in formalizing mathematical theories. Since the common sense informatic situation requires using imprecise facts and imprecise reasoning, the use of mathematical logic for common sense has had limited success. This has caused many people to give up. Gradually, extended logical languages and even extended forms of mathematical logic are being invented and developed.  It is necessary to distinguish between mathematical logic and particular mathematical logical languages. Particular logical languages are determined by a particular choice of concepts and the predicate and function symbols to represent them. Failure to make the distinction has often led to error. When a particular logical language has been shown inadequate for some purpose, some people have concluded that logic is inadequate. Different concepts and different predicate and function symbols might still succeed. In the words of the drive-in movie critic of Grapevine, Texas, ``I'm surprised I have to explain this stuff.''    The pessimists about logic or some particular set of predicates might try to prove a theorem about its inadequacies for expressing common sense.  Since it seems clear that humans don't use logic as a basic internal representation formalism, maybe something else will work better for AI. Researchers have been trying to find this something else since the 1950s but still haven't succeeded in getting anything that is ready to be applied to the common sense informatic situation. Maybe they will eventually succeed. However, I think the problems listed in the later sections of this article will apply to any approach to human-level AI.  Mathematical logic has been concerned with how people ought to think rather than how people do think. We who use logic as a basic AI formalism make programs reason logically. However, we have to extend logic and extend the programs that use it in various ways.  Image result for mathematical logic Artificial intelligence animation  One important extension was the development of modal logic starting in the 1920s and using it to treat modalities like knowledge, belief and obligation. Modalities can be treated either by using modal logic or by reifying concepts and sentences within the standard logic. My opinion is that reification in standard logic is more powerful and will work better.  A second extension was the formalization of nonmonotonic reasoning beginning in the late 1970s--with circumscription and default logic and their variants as the major proposals. Nonmonotonic logic has been studied both as pure mathematics and in application to AI problems, most prominently to the formalization of action and causality. Several variants of the major formalisms have been devised.  Success so far has been moderate, and it isn't clear whether greater success can be obtained by changing the the concepts and their representation by predicate and function symbols or by varying the nonmonotonic formalism. | | |