AI&DS:20AI205 LessonPlan5

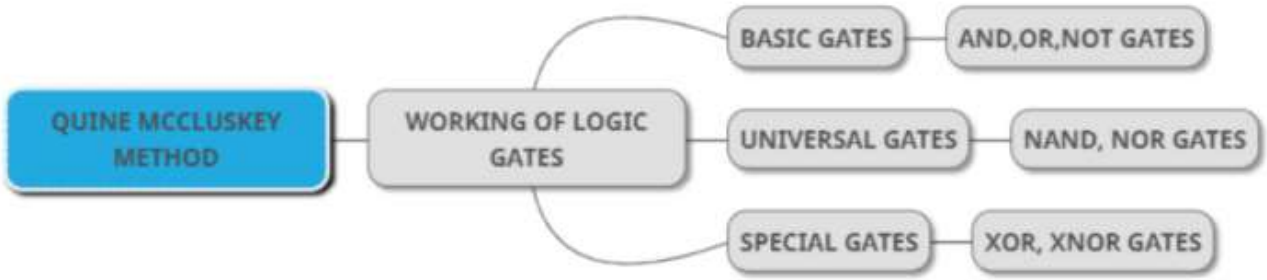
Department	Artificial Intelligence and Data Science
Degree & Semester:	B.TECH & II
Course code & Title:	20AI205 & DIGITAL SYSTEM DESIGN
Unit Title:	BOOLEAN ALGEBRA AND LOGIC GATES
CO / Lesson No (GO):	1/5

- **Prerequisite(s):** Simplification of Boolean functions: K Map - Don't care conditions - Five variable K map
- **Topic :**Quine Mccluskey method - Logic gates.
- **General Objective (GO):** Students will be able to apply the Quine McCluskey method for simplifying the Boolean expressions and apply the operation of Logic gates to obtain special gates.
- **Specific Objectives (SO):** Students will be able to
  - SO1: Carry-out the Quine Mccluskey method for simplification of Boolean expressions[P][Ap].
  - SO2: Illustrate the working of Basic and Universal Logic gates[C][U].
  - SO3: Construct the Special gates from the basic logic gates[P][Ap].
- **Mapping Table**

  (Each SO should be mapped to the specific PO competency and indicators with relevance to the mapping done for the respective course outcome as shown in the table below)

SO	PO	PO/PSO Competency	PO/PSO Indicator
SO1	1,2,3	1.3, 2.1,3.1	1.3.1,2.4.2,3.2.1
SO2	1,2,3	1.3, 2.4,3.2	1.3.1,2.4.2,3.2.1
SO3	1,2,3	1.3, 2.4,3.2	1.3.1,2.4.2,3.2.1

- **Mind map and Summary**



- **Summary**
  - The Quine Mccluskey method is a tabular method based on prime implicants.
  - The Boolean functions with more than five variables cannot be simplified using Kmap and hence the Quine Mccluskey method is used.
  - The basic digital electronic circuit that has one or more inputs and single output is known as Logic gate.
  - Hence, the Logic gates are the building blocks of any digital system.
  - We can classify these Logic gates into the following three categories as Basic gates, Universal gates and Special gates.
- **References (Books/Videos/Journals/Web references)**

- M.Morris Mano and Michael D Ciletti, Digital Design with an introduction to the VHDL, Pearson Education, 5th Edition, 2013.
- A Anand Kumar, Fundamentals of Digital Circuits, 3rd Edition,2014.
- Charles H.Roth, Jr., Fundamentals of Logic Design, 4th Edition, Jaico Publishing House, 2000.Mandal, Digital Electronics Principles & Application, McGraw Hill Edu, 2013.
- Mandal, Digital Electronics Principles & Application, McGraw Hill Edu, 2013.
- Donald D.Givone, Digital Principles and Design, Tata McGraw-Hill, 2003.
- John M.Yarbrough, Digital Logic, Application & Design, Thomson, 2002.
