DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Subject Name: CS3351- Digital Principles and Computer Organization

Year/ Semester: II/ III

Faculty Name: Dr. J. Anitha Gnanaselvi

Academic Year: 2024–2025

Title of Activity:

Interactive Concept Reinforcement on Boolean Algebra and K-Map using Kahoot, Mentimeter & Quizizz

Objective of the Innovation:

To strengthen the understanding of Boolean Algebra simplification and Karnaugh Map (K-Map) techniques through game-based quizzes and real-time feedback tools, enhancing engagement, retention, and conceptual clarity.

Brief Description of the Activity:

In the topic Boolean Algebra and K-Map simplification, traditional lecture methods were enhanced by using interactive edtech tools:

- Kahoot: Hosted live MCQ-based quizzes on Boolean identities, logic gates, and K-map outputs.

- Mentimeter: Conducted word clouds, live polls, and fast-response quizzes to test student intuition on simplification.

- Quizizz: Shared homework quizzes for post-class practice with instant feedback and explanations.

These platforms allowed real-time participation, anonymous answering, and instant analytics of student understanding, enabling the faculty to adapt explanations dynamically during the session.

Tools/Innovations Used:

- Kahoot – Live quiz game with leaderboard

- Mentimeter – Real-time Q&A, polls, and visuals

- Quizizz – Self-paced learning quizzes with performance reports

Why These Tools Were Chosen:

- Boost engagement and motivation through gamification

- Provide instant feedback on student understanding

- Allow all students (even shy ones) to participate

- Easily accessible via mobile or browser

Topics Covered Using the Tool:

- Boolean identities and laws (AND, OR, NOT, De Morgan's)

- Expression simplification

- 2-variable, 3-variable, and 4-variable K-Map minimization

- SOP and POS form recognition

- Identifying and eliminating redundant terms

Learning Outcomes Achieved by Students:

- Improved ability to simplify complex Boolean expressions

- Recognized patterns in K-Map groupings more effectively

- Increased participation and attentiveness during sessions

- Retained concepts through competitive and collaborative learning

- Displayed better quiz/test performance after interactive sessions

Impact and Reflections:

- Students actively participated, even those typically quiet

- Topics like K-map which were abstract became more fun and understandable

- Analytics from Quizizz helped identify students needing extra support

- Class energy and attention span improved significantly