School of Computer Science Engineering and Technology

Course- BCA	Type- Core
Course Code- CBCA101P	Course Name- Digital Design and CO
Year- 2022	Semester-odd
Date- …….	Batch- ALL

Lab Assignment 4– Digital Design and Computer Organization

Experiment No.	Name	CO1	CO2	CO2
4	Implementation of NAND gate as universal gate and Booleans law verification using Verilog coding	✓	---	---

1. Represent the following gates using only NAND gates
   A. NOT
   B. AND
   C. OR
   D. NOR
   E. XOR
   F. XNOR

   Perform the following operations:

   a) Derive the Boolean expression.
   b) Write the truth table for the above expression.
   c) Write a Verilog code for each Boolean expression and then test using wave form and compare with truth table whether your circuit produced same output or not?
2. Write a Verilog code to verify Absorption Law and then test using wave form and compare with truth table whether your circuit produced same output or not?
3. Write a Verilog code to verify Transportation Law and then test using wave form and compare with truth table whether your circuit produced same output or not?
4. Write a Verilog code to verify Consensus Law and then test using wave form and compare with truth table whether your circuit produced same output or not?

Submission Instructions:

- Prepare the submission file according to the following process:

  1. Copy the Verilog code, the Test Bench Code in a Word File.
  2. Take the ScreenShot of Waveform and paste into the same word file.

3. Repeat Step 1 and 2 for all the programs.
4. Copy and Paste all the Verilog code, Testbench Code and Waveform into a single word file as 1_verilog, 1_TestBench, 1_Waveform, 2_verilog, 2_TestBench, 2_Waveform… etc.
5. Convert it into pdf file, name it as **RollNo_Assignment# (Example: E20CSE001_ Assignment2.pdf)**.
6. Submit your file on LMS **within the deadline**.

- Write your **Name and Roll No. as comment before starting of each program**. Keep in mind this is **Mandatory**. Failing which you may lose your marks.
- Make it sure that in each program, **you have mentioned enough comments** regarding the explanation of program instructions.
- **Each student will submit their assignment on their corresponding group slot only.**
- Late submission will lead to penalty.
- Any form of plagiarism/copying from peer or internet sources will lead penalty.
- Following of all instructions at submission time is mandatory. Missing of any instructions at submission time will lead penalty.