Learning Material - Experiment in ICT 2

Week 13

Goal of week

Student will be known about sequential circuit, principles, structure and how to implement sequential circuit. Practice implement sequential circuit by design asynchronous BCD counter using D flip-flop

Content and requirement

Analyze principles, structure and activity of sequential circuit
Explore how to design a sequential circuit with specific function.
Implement asynchronous BCD counter using D flip-flop.

Experimental equipment

1. IC 74LS74 (D-FF)
2. IC 74LS08 (AND)
3. IC74LS00 (NAND)
4. IC 74LS32 (OR)
5. IC 74LS86 (XOR)
6. Function generator
7. Resistors
8. Breadboard
9. 5VDC Power
10. Voltmeter
11. Conductors
12. Oscilloscope
13. 7 segment display

Experimental Steps

1. Analyze principles and structure of asynchronous BCD counter using D flip-flop
- Define input , output variable , state
- Building truth table
- Building excitation equations table
- Assign state table
- Define state diagram
- Draw schematic circuit and assemble in breadboard

2. Analyze principles and structure of BCD counter using JK flip-flop
- Define input , output variable , state
- Building truth table and excitation equations table
- Assign state table
- Define state diagram
- Draw schematic circuit and assemble in breadboard

Experimental Report

All students must have a report, explain everything you do in this experiment with the content:
- Draw circuit's schematic.
- Inform all result getting from this experiment
- Give some remark