Digital Electronics Assignment 2

Batch: B51, B52, B53, and B54. Attempt any six from the list.

April 18, 2024

1. Design JK, D, and T flip flop using SR flip flop?
2. Design T flipflop using JK and D flipflop?
3. Explain functions of Universal Shift register, also explaing how will you perform SISO, SIPO, PISO, and PIPO using shift registers?
4. Draw the Logical block diagram of ring counter and twisted ring (johnsons) counter?
5. Design a binary counter that goes through states in a sequence 1 – 3 – 0 – 2 – 1, Assign suitable binary code to each state, Draw its State Diagram, Draw its State Table, and design its logic block diagram? Can this counter work as sequence generator?
6. Design a Sequence Generator that generates a 11 bit sequence [11001011001]. Determine Number of flipflops required and expalin its working?
7. Draw the Architecture of 8085, explain its pin configuration (all 40 Pins)? Explain how is ALE used for demultiplexing of data bus and lower address bus?
8. Explain addressing modes of 8085 and its types with an example?
9. Explain function of following Instructions in a Program and comment on number or T states required for its completion? Which instruction will affect Flag register and show the status of Flag register?

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;Assembly Language Program of 8085
MVI A,20H
LHLD 2500H
MOV B,M
ADD B
STA 2501H
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10. What is a machine cycle? How many T-states are required for following machine cycle operation in 8085: Memory Read, Memory Write, IO Read, IO Write, Opcode Fetch?
11. Draw the Timing Diagram any two instructions (Instruction Cycle) last Assembly Language Program of 8085? Showing signals like CLK, $A_{15} - A_8$, $AD_8 - AD_0$, ALE, $IO/\bar{M}$, $\bar{WR}$, $\bar{RD}$, S_0, and S_1.
12. What is the significance of A2D and D2A converters and their applications? Explaing working of A2D and D2A conversion with circuit or block diagram?

Date of submission: 27 April 2024.