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Total No. of Questions : 18

B.Tech. (ECE) (E-I 2012 to 2020) /
(Automation & Robotics) (DE-I 2012 & Onward) (Sem.–6)

DIGITAL SYSTEM DESIGN

Subject Code : BTEC-904
M.Code : 71233

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Answer briefly :

1. Differentiate between combinational and sequential circuits.
2. Why the input variables to a PAL are buffered?
3. Design 4:1 MUX using 2:1 MUXs.
4. What is race around condition in JK flip flop?
5. With the help of an example differentiate between truth table and excitation table.
6. What is programmable logic array? How it differs from ROM?
7. Differentiate between Mealy and Moore machines.
8. Define Flow Table in Asynchronous Sequential Circuit.
9. What is field programmable logic array?
10. What is the cause for essential hazards?

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SECTION-B

11. Design and explain a Full Adder using Half Adders and truth table.

12. Explain the working of Master Slave JK flip flop using circuit diagram.

13. Implement the following function using PAL and PLA :

    X (A, B, C, D) = ☆m (7, 8, 9, 10, 11, 12, 13, 14, 15)

14. Explain static and dynamic hazards with examples.

15. What are FPGAs? Discuss the internal architecture of FPGA, highlighting the functionality of each module.

SECTION-C

16. Design a counter with the following repeated binary sequence: 0, 1, 2, 3, 4, 5, 6 by using JK Flip-flop.

17. Design an Asynchronous sequential circuit using SR latch with two inputs A and B and one output Y. B is the control input which, when equal to 1, transfers the input A to output y. when B is 0, the output does not change, for any change in input.

18. Draw an ASM chart to design control logic of a binary multiplier. Realize the same using MUX, decoder and D-type flip flops.

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NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.

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