Total No. of Questions : 5] *[Total No. of Printed Pages : 2*

Roll No .....

EC-605

B.E. VI Semester

Examination, December 2016

VLSI Circuits and Systems

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.
ii) All parts of each question are to be attempted at one place.
iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.
iv) Except Numericals, Derivation, Design and Drawing etc.
v) Assume suitable data if required.

1. a) Give a design flow presentation of CMOS with the help of suitable example.
   b) How CMOS is different from nMOS and pMOS? Explain.
   c) MOS transistors could be worked as switch. Verify this statement with the help of suitable example.
   d) Explain different design strategies, also draw and elaborate each part of Y-Chart.

   OR

   Draw any register using CMOS circuit and verify their results with the help of suitable example.

2. a) Explain the verbal description of any MOS equivalent state machines.
   b) Derive and explain Mealy and Moore Model machines.
   c) Write state table of any MOS circuit and explain its transition diagram.
   d) Write down different steps to show realization of state diagrams. Differentiate between the synchronous and asynchronous machines.

   OR

Explain characterizing equation. Give realization of state diagram from verbal description of any CMOS Circuit.

3. a) Explain Algorithmic state machine.
   b) Explain the fundamental concept of hardware algorithm.
   c) What are the consequences of controllers in state machine? Explain.
   d) Explain the fundamental concept of hardware/firmware algorithm with suitable example.

OR

Give a brief introduction on Controllers used in MOS devices. Give a classification of them and explain each one of them with the help of suitable example.

4. a) Explain fundamental mode asynchronous sequential machine.
   b) Define pulse mode asynchronous sequential machine with example.
   c) Explain the races and hazards problem in sequential machines.
   d) Write any example that shows races and hazards condition in sequential state machine and explain it's remedial.

OR

How many types of secondary assignments are there in asynchronous sequential machine? Name them and explain any one.

5. a) Write down the method of Fault detection in combinational circuits.
   b) What do you mean by faults in CMOS circuits? Explain in brief.
   c) Give a brief classification of Faults in combinational circuits.
   d) Write short notes (Any two)
      i) CAD tools designing ii) PALASM
      iii) PLA iv) CPLD

OR

Explain the principle of Fault detection using Boolean difference method. How does it different from the path sensitization method.

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