21-12-2015

DOON UNIVERSITY, DEHRADUN

End Semester Examination, First Semester, 2015

School of Physical Sciences

Integrated M.Sc. Program (Computer Science)

First Semester

Course: CS-102: Computer System Architecture

Time Allowed: 3Hours *Maximum Marks: 30*

Note: Attempt All Questions from Sections A,B,C.

SECTION: A (Short Answer Type Questions/ to be answered in about 25/50/75/150 words. Attempt All Questions.

(Marks:- 6 X 1=6)

1. How many flip flops are required to build a binary counter circuit to count from 0 to 1023?
   1. 6
   2. 10
   3. 24
   4. 12
2. Counter is a
   1. combinational circuit.
   2. sequential circuit.
   3. both.
   4. none.
3. What will be Excess - 3 code for decimal (584)?
   1. (0111 0100 1000).
   2. (1000 1011 0111).
   3. (1011 0111 1000).
   4. (1000 0111 1110).
4. In the toggle mode a JK flip-flop has
   1. J = 0, K = 0.
   2. J = 1, K = 1
   3. J = 0, K = 1
   4. J = 1, K = 0
5. The 2's complement of the number of 1010101
   1. 0101011.
   2. 0101010.
   3. 1101010.
   4. 1110011.
6. Which of these sets of logic gates are designated as universal gates?
   1. NOR, NAND.
   2. XOR, NOR, NAND.
   3. OR, NOT, AND.
   4. NOR, NAND, XNOR.

SECTION: B (Short Answer Type Questions to be answered in about 75/100/250 words. Attempt All Questions.

(Marks: 6X2=12)

1. Explain different types of Flipflops.
2. Construct AND, OR, NOT using NAND gate.
3. What is difference between Decoder & Multiplexer?
4. How many flipflops will be complemented in a 10 bits binay counter to reach the next count after
   i) 1001100111
   ii) 0011111111
5. Differentiate using example between Combinational Circuits & Sequential Circuits
6. Simplify the following Boolean Function using four variable maps
   $F(A,B,C,D)=\sum(0,1,2,5,8,9,10)$

SECTION: C (Long Answer Type Questions to be answered in about 750 words.

(Marks: 4X3=12)

1. Write notes on any three of the following
   a. Half adder
   b. Encoder
   c. Multiplexer
   d. Shift register
   e. Binary counter