END TERM EXAMINATION

SECOND SEMESTER [BCA] MAY- JUNE 2015

Paper Code: BCA-106	Subject: Digital Electronics (Batch 2011 onwards)
Time: 3 Hours	Maximum Marks: 75

Note: Attempt any five questions including Q.No 1 which is compulsory. Select one question from each unit.

Q1   (a) State and Prove the Demorgan's theorems.   **(4)**
       (b) Desgin a full adder using the NAND gates only.   **(4)**
       (c) What is a multiplexer? Desgin a 32 to 1 multiplexer using the 8 to 1 multiplexers.   **(4)**
       (d) What is a D flip flop? Show how SR flip flop can be converted to D flip flop. **(4)**
       (e) What is a ripple counter? Explain the difference between the performance of asynchronous and synchronous counters.   **(4)**
       (f) Explain the working of bi directional shift register with logic diagram.   **(5)**

UNIT-I

Q2   (a) What is Gray code? Why it is important? List features of BCD and Excess-3codes.   **(6)**
       (b) What are Universal gate? Obtain EX-OR operation with universal gates. **(3.5)**
       (c) convert the following octal numbers to hexadecimal numbers: **(3)**
         (i) 137
         (ii) 1275
         (iii) 673

Q3   (a) Simplify the expression $Y = \sum_m (7,9,10,11,12,13,14,15)$ using the K-map method.   **(6.5)**
       (b) Realize $Y = A + BC\overline{D}$ using NAND gates only.   **(6)**

UNIT-II

Q4   (a) Design a 4 bit parallel adder circuit. Give the truth table and explain the operation.   **(6.5)**
       (b) What is binary multiplier? Discuss the multiplier using shift method.   **(6)**

Q5   (a) Explain the working of BCD to seven segment decoder with diagram.   **(6)**
       (b) What is an encoder? Discuss the design of octal to binary encoder.   **(6.5)**

UNIT-III

Q6   Discuss and explain the working of master slave JK Flip flop. What are its advantages?   **(12.5)**

Q7   What is shift register? Give its classification and explain the working of each type diagram.   **(12.5)**

UNIT-IV

Q8   What is modulo counter? Design a MOD-6 counter by giving all design steps. **(12.5)**

Q9   Explain the following: (a) RAM   (b) PLA   **(12.5)**

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