

(Please write your Exam Roll No.)

Exam Roll No. 30321402014

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) Design a full adder using the NAND gates only. (4)
(c) What is a multiplexer? Design 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-3 codes. (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 $Y = A + BC\bar{D}$ 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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