BECT – 303

Roll No

Odd Semester Examination, 2019-2020

B. TECH. (ECE/CSE ,SEMESTER- III)

DIGITAL ELECTRONICS

Time: 03:00 Hours

Max. Marks:100

Total no. of printed pages: 1

Note: Attempt all questions.

Q1. Attempt any four questions from the following :   4x5=20
  a) Convert following:
     i. $(35614)_7 = (\ )_{12}$
     ii. $(100100111000.0111)_{BCD} = (\ )_{10}$
  b) $f(A,B,C,D,E) = \Sigma m(0, 1,7\ 9,11,13,15,16,17,23,25,27)$
  c) Sketch the following equation using one AND and one OR gate only:
     $Y = (A+B)\ (A+C)$
  d) Perform $(1011)_2 - (0100)_2$ using 1's complement method.
  e) Write short note on De Morgan's theorem.
  f) Encode the data bits 0101 into a seven bit even parity Hamming Code.

Q2. Attempt any four questions from the following :   4x5=20
  a) Design a full adder using two half adder.
  b) Implement a full adder using 8:1 multiplexer.
  c) Design four bit Priority Encoder.
  d) Implement the following function using 4 to16 line decoder.
     $f = \Sigma m(1,2,4,7,8,11,12,13)$
  e) Write short notes on PAL and PLA.
  f) Design a circuit for two bit magnitude comparator.

Q3. Attempt any two questions from the following :   2x10=20
  a) Design a S-R flip flop. Explain its applications and disadvantages.
  b) Explain the operation of 4 bit Ring counter. Also draw its timing diagram.
  c) What is race around condition? How it can be removed, explain.

Q4. Attempt any two questions from the following :   2x10=20
  a) Define the characteristics of logic families.
  b) Design a Two input NOR gate using CMOS. Also explain its parameters.
  c) Explain the working of TTL logic family.

Q5. Attempt any two questions from the following :   2x10=20

  a) What is meant by Hazard in a logic network? Discuss different types of Hazards.
  b) Draw circuit diagram of MOS dynamic RAM cell. Also explain its working.
  c) A 16x4 size memory is available. Expand its word size so as to obtain a 16x8 memory.