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Roll No .....

EE/EX-4003-CBGS

B.E. IV Semester

Examination, June 2020

Choice Based Grading System (CBGS)

Digital Electronics Logic Design

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) State and prove De-Morgan's theorems.
   b) Convert the following:
      i) $(204)_{10} = (\quad)_8$
      ii) $(3A7)_H = (\quad)_2$
      iii) $(105)_{10} = (\quad)_2$
      iv) $(11001)_2 = (\quad)_{10}$

2. a) Describe the operation of NAND gate with the help of truth-table and standard logic diagram.
   b) Define and explain minterm, maxterm, Sum Of Product (SOP) and Product Of Sum (POS).

3. a) Design a full adder circuit with the help of truth table.
   b) Implement a NAND gate using NOR gates.

4. a) Design a BCD adder giving rules of BCD addition.
   b) Design and explain the working of look ahead carry generator.

5. a) What are flip flops? Construct a S-R flip flop and explain its operation.
   b) Define and explain:
      i) State table
      ii) State diagram
      iii) Excitation table
      iv) Characteristic equation

6. a) Design a synchronous 4-bit up-down counter.
   b) What is a Shift register? Explain serial in parallel out shift register.

7. a) What do you mean by Random Access Memory (RAM)? Draw the logic diagram of a 4×4 RAM and describe the operations.
   b) With the help of diagram explain the working of successive approximation type Analog to digital converter.

8. Write short notes on any two of the following:
   i) Multiplexer
   ii) Magnitude comparator
   iii) BCD counter
   iv) Types of ROM and their comparison
   v) Programmable Logic Array (PLA)
   vi) Digital to analog converter

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