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### Total No. of Pages: 02

## **Examination May-2014**

# **DIGITAL CIRCUIT AND LOGIC DESIGN (CS-205)**

Paper ID-A0453

Time: 03 Hours

Maximum Marks: 60

#### Instruction to Candidates:

- 1) Section A is compulsory.
- 2) Attempt any Four questions from Section B.
- 3) Attempt any Two questions from Section C.

#### Section A

(10 \* 2 = 20)

Q1)

- a) Differentiate between synchronous and asynchronous sequential circuits.
- b) How do Multiplexer differs from Encoder?
- c) Convert:  $(154.514)_{10} = ()_8$ .
- d) Subtract -24 from 65 using 2's complement.
- e) What is meant by resolution of an D/A convertor?
- f) Realize AND gate using NOR gates only.
- g) What is custom and semi-custom design?
- h) Outline two major applications of multi-vibrators?
- i) A preset able counter has sixteen flip-flops. If the preset number is 125, what is the modulus?
- j) What is the minimum voltage value that is considered as high stage input for TTL logic family?

#### Section B

(4 \* 5 = 20)

- Q2) Draw the logic symbol and construct the truth table for each of the following gates:
  - a. Three input NAND gate
  - b. Two input OR gate
  - c. Three input EX-NOR gate

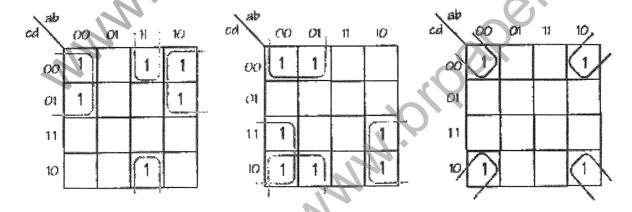
- Q3) What is a Decoder? Compare a decoder and a Demultiplexer with suitable block diagrams.
- Q4) Differentiate between static MOS and Dynamic MOS RAM. Explain the working of a static MOS RAM cell with the help of a circuit diagram.
- Q5) State and prove De-Morgan's Theorem for two variables.
- Q6) Why interfacing is required for digital ICs? List out the major considerations while interfacing TTL gate and CMOS gate.

# Section C

$$(2 * 10 = 20)$$

Q7) Write out the minimized Boolean Algebra Expression for each of the Karnaugh maps below.

Also, Construct Truth tables for each of the maps.



Q8) Discuss the various semiconductor memories with their corresponding applications.

- End

- Q9) Write short notes on:
  - (a) VLSI Design
  - (b) Bus Structures