d) What do you mean by interfacing? Explain the need. How will you interface TTL to CMOS.

OR

Why it is necessary use pull up resistor when TTL is used to drive CMOS? Under what circumstances is this operation successful?

******
www.rgpvonline.in

---

**Roll No .........**

# EC-403
## B.E. IV Semester
Examination, June 2016
### Digital Electronics
*Time : Three Hours*

*Maximum Marks : 70*

*Note:* i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

1. a) Perform the following binary division: 11110001/1001 and 11.11/11.

   b) Perform the following binary multiplications: 1001.001×1010.101 and 11110001×101010.

   c) Use Quine McCluskey method to obtains minimum SOP form for following functions:

   i) $F(A, B, C, D) = \sum m(0, 2, 5, 7, 8, 10) + \sum d(13, 15)$

   ii) $F(A, B, C) = \sum m(0, 2, 3, 4, 6, 7) + \sum d(5)$

d) Draw the logic circuit for the following equations. Simplify the equations and draw the simplified logic circuit:

i) $V = AC + ACD + CD$

ii) $W = (BCD + C)CD$

iii) $X = (B + D)(A + C) + ABD$

OR

Use De Morgan's theorem to prove that a NOR gate with inverted inputs is equivalent to an AND gate.

a) Draw the logic circuit that would be used to implement the following Boolean equations:

i) $M = (AB) + (C+D)$

ii) $N = (A + B + C)D$

b) Draw the connections required to convert a NAND gate into a inverter.

c) Draw the connection required to construct An OR gate from two NOR gates and an AND gate from NAND gates.

d) What do you mean by multiplexers? Explain it with a suitable example.

OR

Discuss about the look ahead carry generator. Also explain encoders and decoders.

3. a) What is the difference between SR latch and SR flip flop?

b) State properties of SR, JK, T and D flip flops.

c) What is the advantage of a master slave JK flip flip over a standard JK flip flop?

d) Draw circuit diagram for a stable circuit vibrator and explain its working.

OR

Explain different types of multivibrators. Briefly explain any one of them.

4. a) Design a BCD to Excess 3 code converter using PLA.

b) What do the following term means when applied to electronic memories. Volatile, static, dynamic, destructive.

c) Compare ROM, PAL and PLA.

d) Describe the methods of storing data in ROM, PROM and EPROM. What are there relative merits.

OR

State the full name of following memory devices and describe very briefly the function of each one ROM, PROM, EPROM, RAM, PLA.

5. a) How digital integrated circuits are classified on the basis of packing density? Explain.

b) What are the different characteristics of digital IC's? Explain each briefly.

c) What are the advantages of CMOS

i) Over NMOs

ii) Over TTL