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Roll No ....

EC-403

B.E. IV Semester

Examination, December 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) Explain the terms digital signal and digital system.

    b) What is meant by radix and positional notation of number system?

    c) State the methods used to simplify the Boolean equations.

    d) Prove De Morgan's theorem for a 4 -variable function

OR

Simplify the following expression

$A\bar{B}\bar{C}+\bar{A}\bar{B}C+\bar{A}B\bar{C}+\bar{A}\bar{B}\bar{C}$

2. a) What is a Multiplexer? Explain.

    b) What are the applications of Multiplexers?

    c) What is a Demultiplexer explain?

    d) Design and implement a Excess - 3 to BCD code converter using AND and OR gates.

OR

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Implement the odd and even parity functions for four variables using a 4 - input decoder and OR gates.

3. a) What is a D flip-flop?

    b) List four basic flip-flop applications.

    c) What advantages does a J-K flip-flop have over an S-R flip-flop.

    d) Realise J-K flip-flop using T flip-flop.

OR

Design D flip-flop using T flip-flop.

4. a) What is a Multivibrator?

    b) List the applications of Astable Multivibrator.

    c) Draw the internal structure of IC 555

    d) Derive the frequency of oscillation of an astable multivibrator using IC 555 timer.

OR

Describe the theory behind astable multivibrator using

    i)   NOT gates

    ii) NAND gates

5. a) Explain the parameters used to characterise logic families.

    b) Write some of the characteristics of digital IC's .

    c) What is logic gate load?

    d) What is EEPROM? Write a short note on it.

OR

Explain organisation and construction of RAM

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