

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

$$\overline{A}\overline{B}\overline{C} + \overline{A}\overline{B}C + \overline{A}B\overline{C} + \overline{A}BC$$

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

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
