No. of Printed Pages : 3 **Roll No. .....**

AA685

M. C. A. EXAMINATION, May 2019

(First Semester)

(B. Scheme) (Re-appear)

MCA407

DIGITAL ELECTRONICS

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) Prove that NAND gate is universal gate. **7.5**

(b) Explain error correcting codes with example. How error correction is different from error detection ? **7.5**

2. (a) Solve the following Boolean expression with the help of KM method : **7.5**

$f(A, B, C, D) = \Pi (0, 1, 2, 8, 10, 11, 14, 15)$

(b) Solve the following Boolean expression with the help of KM method : **7.5**

$f(A, B, C, D) = \Sigma (0, 1, 2, 8, 10, 11, 14, 15) + d (5, 9)$

Unit II

3. Realize the given Boolean expression with the help of a single 8 : 1 multiplexer : **15**

$f(A, B, C, D) = \Sigma (0, 1, 2, 3, 5, 7, 11, 13) + d (9, 12)$

4. (a) Give the difference between edge triggered and level triggered flip-flop with diagram. **7.5**

(b) Design Ring counter. **7.5**

Unit III

5. (a) Explain the working of basic TTL gate. **7.5**

(b) Explain how the interfacing of CMOS & TTL family is carried out. **7.5**

6. (a) Give detailed organization of memory. **7.5**

(b) What are characteristics of memory devices ? **7.5**

Unit IV

7. (a) Give the specifications of ADC. **7.5**

(b) Explain R-2R ladder. **7.5**

8. (a) Explain the working of ROM. **7.5**

(b) Write short note on FPGA. **7.5**