



KIIT Deemed to be University
AUTUMN MID-SEMESTER EXAMINATION –2018
DIGITAL ELECTRONICS (EC-2011), BRANCH: CSE, IT, CSSE, CSCE

Full Marks: 20

Duration: $1\frac{1}{2}$ hrs

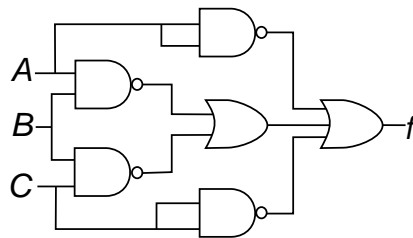
- *Answer any **FOUR** questions including question No.1 which is compulsory.*
- *Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.*

1. a) Perform following arithmetic: (i) **BCD Subtraction** (657-589) [1x5]
(ii) **(-14) - (-6)** using **2's complement** method
b) What is a **Carry Look Ahead Adder**? What is its advantage over Ripple Carry adder?
c) Design a **XNOR** gate using **NAND logic**.
d) If we transmitted a 7-bit **even parity hamming code** through a noisy channel and at the receiver we obtained '1001001'. Decode the correct 4-bit data word.
e) Implement a **1 Bit Magnitude Comparator** in a **decoder** circuit.

2. Obtain a minimized expression for the following Boolean function using **K-map** and [5]
implement the minimized expression using 2-input **NAND gates** only.

$$F(A,B,C,D) = \sum m(1,5,6,12,13,14) + d(2,4)$$

3. a) Implement a **Full-Sub tractor** in an **Active Low Decoder** Circuit and using **2-input** gates [3]
only.
b) **Simplify** and **minimize** the output(f) of the logic circuit given below: [2]



4. a) Design a combinational circuit with three inputs x, y, and z, and three outputs A, B, and C. When the binary input is **0, 1, 2, or 3**, the binary output is **two greater** than the input. When the binary input is **4, 5, 6, or 7** the binary output is **three less** than the input. [3]
b) "Minterms and Maxterms are **complement** of each other". Justify [2]
5. a) Design and explain a **4-bit Binary Adder-Subtractor** circuit using Full Adders and **XNOR** gates only [3]
b) Show: $AB + \overline{A}C + BCD = AB + \overline{A}C$ [2]