KIIT Deemed to be University, Bhubaneswar
Autumn Mid-Semester Examination – 2019
DIGITAL ELECTRONICS (EC-2011)

Full Marks: 20 **Duration: 1hour 30 mins**

- ***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. Solve the BCD arithmetic : (435-276) ***[1X5]***

B. What is the minimum number of NAND gates required to implement the function

F = A' + B.C

C. Describe the advantage of look ahead carry adder over binary parallel adder.

D. A seven bit Hamming code is received as **1001001**. What is the correct code?

E. Implement **XNOR** gate using 2- input NOR gates only

2) Given **F(w,x,y,z)=Σm(0,1,2,3,7,8,10)+Σd(5,6,11,15)**.Obtain the minimum product-of-sums (POS) form of f(w,x,y,z) using K-maps and also implement the minimized expression using ***minimum numbers of NOR gates only.*** ***[5]***

3) A Design a 4:2 priority encoder with the given priority $D_3>D_0>D_2>D_1$ where all D_i's are input to the encoder. ***[3]***

B. Explain **weighted codes** and **non-weighted codes** with example. ***[2]***

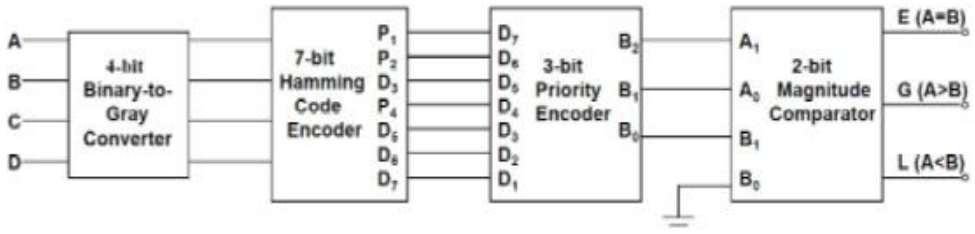
4) A. Implement a **Full Subtractor** in an active low 3 to 8 line decoder using only 2-input external gates. ***[3]***

B. If **(AB)'+A'B=C**, find F= **(AC)'+A'C** ***[2]***

5) A. Draw and explain 4-bit binary parallel adder-subtractor block using full adders and XNOR gates only. ***[3]***

B. Design 1-bit magnitude comparator using a 2:4 decoder and 2-input gates ***[2]***

6) A. ***[3]***



In the figure given above, ABCD = "1010" is a 4-bit Binary input data. Find all three outputs of the 2-bit magnitude comparator, assuming even parity system for Hamming Code Encoder and input line having highest decimal subscript is having the highest priority in the Priority Encoder. Find L,E and G

B. ***[2]***

What are the invalid states in **Excess-3 codes**?