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POSSESSION OF MOBILE IN EXAMINATION IS UFM PRACTICE

Name of Student ---------- Enrolment No. ----------

Department ----------

BENNETT UNIVERSITY, GREATER NOIDA

Midterm Examination, SPRING SEMESTER 2018-19

COURSE CODE: **ECSE104L** MAX. DURATION: **ONE HOUR**

COURSE NAME: **DIGITAL DESIGN**

COURSE CREDIT: **5** MAX. MARKS: **50**

Note: All the questions are compulsory.

- Please write precisely and neatly. Please make clear diagram wherever required.

Q1.Perform following operation and write all intermediate steps (5 Marks)

a. Subtract 25-10 using 2's complement
b. Subtract 12 -20 using 1's complement

Q2. Perform the following numbers conversion: (4 Marks)

(a) $(124.56)_{10} = (?)_8$
(b) $(ABC.67)_{16} = (?)_4$

Q3. Represent the decimal number 1935 in (2 Marks)

(a) BCD code
(c) 8 4 -2 -1 code

Q4.Simplify the following Boolean functions, using four-variable k-maps: (4 Marks)

F (A,B,C,D) = AD' + B'C'D' + BC'D' + B'C'D

Q5. Identify and analyse the Boolean function with and without don't care condition in terms of number of literals(L), gate input(G) for the following scenario (10 Marks)

F (A, B, C, D) = $\sum$ (0, 6, 8, 13, 14)
d (A, B, C, D) = $\sum$ (2, 4, 10)

Q6. Design a BCD to seven-segment display decoder. Prepare the truth table and also the minimized Boolean expression for **one of the output** using K-Map for this problem. (10 Marks)

Q7. Analyse ripple carry adder and carry lookahead adder in terms of power, area and performance (computation time) explain with a real-life example when you will use ripple carry adder and when you will use carry look ahead adder? (5 Marks)

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Q8. Write Verilog code of ripple carry adder using full adder. (10 Marks)

```
module fulladder(S,Cout,A,B,Cin);

input A,B,Cin;
output S,Cout;

** write your code**

endmodule

module RCA(S,Cout,A,B,Cin);

input [3:0]A,B
input Cin;
output [3:0]S;
output Cout;

** write your code**

endmodule
```