



EASTERN MEDITERRANEAN UNIVERSITY

Computer Engineering Department

CMPE223, Quiz I

Name : **Number** : **Duration: 35 min.**

MOBILE Phones are not ALLOWED in the EXAM

Q1) [40pts] Answer the following:

(a) Convert the decimal number $(231.875)_{10}$ to Octal system

$(231.875)_{10} = (\dots\dots\dots)_8$

(b) Convert the decimal number $(231.875)_{10}$ to Binary system

$(231.875)_{10} = (\dots\dots\dots)_2$

(c) Convert the decimal number $(231.875)_{10}$ to Hexadecimal system

$(231.875)_{10} = (\dots\dots\dots)_{16}$

(d) What is the decimal equivalent of the following signed 2's complement number 1111 0110

.....

(e) Noting that $2^2=4$, convert $(11110.111)_2$ to base-4 system

Result = $(\dots\dots\dots)_4$

Q2) [20pts] Using 7-bit 2's complement representations perform the following operation:

$(-13)_{16} + (3A)_{16}$
.....
.....

Result = $(\dots\dots\dots)_2$ Overflow (Yes/No), reason:

Q3) [20pts] Using Boolean algebraic manipulation, simplify the following Boolean function:

$$F(A,B,C) = A'B'C' + AC' + BC'$$

F =

Q4) [20pts] Consider the following Boolean function: $F(A,B,C,D) = [(A'B+C)+D'] \cdot B$

(a) Find the complement of F using the duality principle

F_{dual} =

F' =

(b) Find the complement of F using the DeMorgan theorem

F' =