

DLD Assignment 1

Deadline Monday, 6th October 2025

Question No1: Convert the hexadecimal number 64CD to binary, and then convert it from binary to octal.

Question No2: Perform subtraction on the given unsigned numbers using the 10's complement of the

subtrahend. Where the result should be negative, find its 10's complement and affix a minus

sign. Verify your answers.

(a) $4,637 - 2,579$ (b) $125 - 1,800$

(c) $2,043 - 4,361$ (d) $1,631 - 745$

Question No3: The following decimal numbers are shown in sign-magnitude form: +9,286 and +801.

Convert them to signed-10's-complement form and perform the following operations

(note that the sum is +10,627 and requires five digits and a sign).

(a) $(+9,286) + (+801)$

(b) $(+9,286) + (-801)$

(c) $(-9,286) + (+801)$

(d) $(-9,286) + (-801)$

Question 4: Demonstrate the validity of the following identities by means of truth tables:

(a) DeMorgan's theorem for three variables: $(x + y + z) = x y z$ and $(xyz) = x + y + z$

(b) The distributive law: $x + yz = (x + y)(x + z)$

(c) The distributive law: $x(y + z) = xy + xz$

(d) The associative law: $x + (y + z) = (x + y) + z$

(e) The associative law and $x(yz) = (xy)z$

Question 5: Draw logic diagrams to implement the following Boolean expressions:

(a) $y = [(u + x) (y + z)]$

(b) $y = (u \cdot y) + x$

(c) $y = (u + x) (y + z)$

(d) $y = u(x \cdot z) + y$

(e) $y = u + yz + uxy$

(f) $y = u + x + x(u + y)$