Roll No: _____

NATIONAL UNIVERSITY OF MODERN LANGUAGES

Department Of Computer Science

BSCS 3rd SEMESTER

Assignment 1

Subject Code: **Total Marks: 20**

Subject: Digital Logic Design **Due Date:22/9/2025**

(Question No.1) **2 Marks**

What is the largest binary number that can be expressed with 14 bits? What are the equivalents decimal and Hexadecimal numbers?

(Question No.2) **2 Marks**

Convert the decimal number 431 to binary in two ways: (a) Convert directly to binary; (b) convert first to hexadecimal and then from hexadecimal to binary. Which method is faster?

(Question No.3) **4 Marks**

(a) Find the 16's complement of B2FA.
(b) Convert B2FA to binary.
(c) Find the 2's complement of the result in (b).
(d) Convert the answer in (c) to hexadecimal and compare with the answer in (a).

(Question No.4) **6 Marks**

Convert decimal +46 and +29 to binary, using the signed-2's-complement representation and enough digits to accommodate the numbers. Then perform the binary equivalent of (+29) + (−49), (−29) + (+49), and (−29) + (−49). Convert the answers back to decimal and verify that they are correct.

(Question No.5) **3 Marks**

Do the following conversion problems:
(a) Convert decimal 27.315 to binary.
(b) Calculate the binary equivalent of 2/3 out to eight places. Then convert from binary to decimal. How close is the result to 2/3?
(c) Convert the binary result in (b) into hexadecimal. Then convert the result to decimal. Is the answer the same?

(Question No.6) **3 Marks**

Determine the base of the numbers in each case for the following operations to be correct:
(a) 14/2 = 5, (b) 54/4 = 13,
(c) 24 + 17 = 40.

Note: Please avoid copying assignment solutions from ChatGPT. Instead, try to solve the assignments on your own. This is important for your learning and development, and it will help you succeed in university and your future career.