National University of Computer & Emerging Sciences, Karachi

Spring -2025 CS-Department

Assignment- 1

7th February, 2025

Course Code: EE1005	**Course Name: Digital Logic Design (DLD)**
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Date of Submission	**14-02-25**

1. Convert 1073_{10} into a binary number.
2. Convert 81_{10} to Binary
3. Convert decimal 27.315 to a Binary.
4. (a)$11010_2 + 11100_2$ (b)$101011_2 + 110101_2$
5. (b)$101110_2 - 100100_2$ (b)$1001100_2 - 110_2$
6. Convert Hexadecimal to Octal (a) FA2516 (b) F92016 (c) 110016
7. Convert Octal to Hexadecimal (a) 7778 (b) 1238 (c) 6358
8. Express each decimal number in binary as an 8-bit sign-magnitude number:
   (a) -83 (b) +101 (c) -114
9. Express each decimal number as an 8-bit number in the 1's complement form:
   (a) – 66 (b) +116 (c) -99
10. Express each decimal number as an 8-bit number in the 2's complement form:
    (a) -59 (b) +102 (c) -126
11. Determine the decimal value of each signed binary number in the sign-magnitude form:
    (a) 10011101 (b) 01110100 (c) 10111011
12. Determine the decimal value of each signed binary number in the 1's complement form:
    (a) 10111001 (b) 01100100 (c) 10111101
13. A system uses **8-bit two's complement representation** for signed numbers. What is the decimal equivalent of the following binary numbers?
    (a) $\mathbf{10101100_2}$ (b) $\mathbf{01111001_2}$ (c) $\mathbf{11110000_2}$
14. Convert each pair of decimal numbers to binary and add using the 2's complement form(8bit representation) :
    (a) -38 and -27 (b) 59 and -39 (c) - 58 and 65 (d) -102 and – 85
15. What is Binary Coded Decimal (BCD), and how does it differ from regular binary representation?
16. Analyse your surroundings and think about applications of BCD, where it is being using?
17. Convert the following decimal numbers to BCD: (a) 57 (b)109
18. Add the following numbers after conversion to BCD.
    (a) 7+9 (b) 25 + 58
    (c) 76 + 84 (d) 89 + 68
19. Determine which of the following even parity codes are in error.
    (a) 110011001 (b)10111111010001010 (b) 010101110 (d) 0111000100101101
20. Assign the proper odd parity bits to the following code groups:
    (a) 0110 (b) 101101 (c) 101101011111 (d) 100011100101