Nepal College of Information Technology (NCIT)

Internal assesment

Each question are of equal marks

Answer must be as practical as possible

F.M = 100

P.M = 45

Subject: Logic circuit

Level: Bachelor

Program: Software Engineering(Day/morning)

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1. Assume the last 4 digit of your college roll number as a decimal number and convert it into equivalent
    I. Binary number
    II. Octal number
    III. Hexadecimal number

2. What are special purpose gate. Where and how these gate can be used in digital systrm. Explain with logic diagram.

3. Implement the following function using:
    I. NAND gate only
    II. Nor gate only
    $F= \sum(1,4,5,6,12,14,15)$
    $D= \sum(11,13)$

4. Assume you as a network engineer, How do you detect the receive binary information is correct or not. Explain anyone error detection mechanism and draw the circuit diagram.

5. Why digital system becomes more useful in toays world as comparison to analog system.

6. Explain with example and logic diagram how do you construct higher order MUX using lower order MUX.

7. Explain the procedure to be considered while designing a sequential circuit in digital system design. Considering two variable state diagram of your interest, design the sequential circuit using s-r flipflop.

8. design a combinational circuit that has 4 inputs and 2 outputs, one of the output is high when majority of inputs are low. The second output is high when two of the input are low and remaining two are high.

9. Assume the last digit of your PU symbol number as X(if x<5, assume x= x+4). Design a mod x synchronous up counter using J−K flipflop.

10. Design a four bit parallel adder/subtractor circuit with one selection variable as x and two input y and Z. For x=0,the circuit perform addition i.e (Y+Z) and for x=1 the circuit must perform subtraction(Y-Z) by taking 2's complement of Z.

Best wishes!