Pokhara University

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| Level: Bachelor | Semester: Spring | Year : 2014 |
| Programme: BE | | Full Marks: 100 |
| Course: Logic Circuit | | Pass Marks: 45 |
| Time : 3hrs. |

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| *Candidates are required to give their answers in their own words as far as practicable.* |
| *The figures in the margin indicate full marks.* |
| Attempt all the questions. |

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|  | 1. Define positive and negative logic system. “Digital circuits are easier to design than analog circuit.” Do you agree with this statement? Give reasons to support your answer. 2. Find the value of X. 3. (777)x = ( 212 )8 4. (DEC)H = (0101)x 5. (X)3 | 7  8 |
|  | 1. State and Prove De-Morgan’s Theorem. List out the factors to be considered while constructing the Logic Gates. 2. What is Don’t care condition? Simplify given function using K-map with circuit design.   F(W,X,Y,Z)=Σ(1,4,5,6,12,14,15) and don’t care condition D(W,X,Y,Z)= Σ (10,11). | 7  8 |
|  | 1. Define universal gate. Design the three bit EX-OR circuit using only Universal gates. 2. Design a combinational circuit that accepts a 3 bit number as input and generates the output binary number equal to the 2’s complement of input number. | 7  8 |
|  | 1. Show how a full adder can be converted to a full substractor with the addition of one inverter circuit. 2. Implement the following : 3. F(A,B,C)= ∑ (1,3,5,6) ( using MUX) 4. F1=∑(0,2,5) F2=∑(3,4,7) F3=∑(6,7) (using ROM) | 7  8 |
|  | 1. Realize the following state diagram into a circuit using j-k flip-flop.      1. Describe read and write operation in RAM with diagram. Draw a circuit for 6-bit SIPO shift register. | 8  7 |
|  | 1. Design an arithmetic circuit with one selection variable and two data inputs A and B, When S= 0, the circuit performs the addition operation F = A+B when S= 1, the circuit performs the increment operation F= A+1 (only show the block diagram). 2. Design a 4-bit arithmetic circuits which performs eight different arithmetic operations. | 8  7 |
|  | Write short notes on: (**Any two**)   1. Master slave flipflop. 2. Nibble Adder. 3. PLA. | 2×5 |