Mettu University

Department of electrical and computer engineering

Digital logic design individual assignment _1

Weight -20%

1. Develop the logic circuit necessary to meet the following requirements.

   A battery-powered lamp is to be operated from two switches, one at the back door and one at the front door. The lamp is to be ON if the front switch is ON, the back switch is off or if front switch is off, and the back switch is on. The lamp is to be OFF if bot switches are off or if both switchers are ON .Let, a High output represent the on condition and LOW output represents the off condition.

2. Design a three-bit magnitude comparator having one output that goes HIGH when the two three-bit numbers are equal. Use only NAND gates.

3. A committee of three individuals decide issues for an organization. Each individual votes either yes or no for each proposal that arises. A proposal will be passed if it receives at least two yes votes. Design a circuit that determines whether a proposal passes.

4. Design a combinational circuit whose input is a four-bit number and whose output is the 2's complement of the input number.