EE1005 – Digital Logic Design
Quiz# 4

Instructor: Muhammad Adeel Tahir   **Section:** SE-2A   **Time:** 30 Minutes

Name: _____

Roll No: _____   **Total: 20 marks**

Instructions: Make sure the handwriting is neat and clean while drawing the circuit, quiz will be marked as 0 if attempted in a writing that is not readable at all.
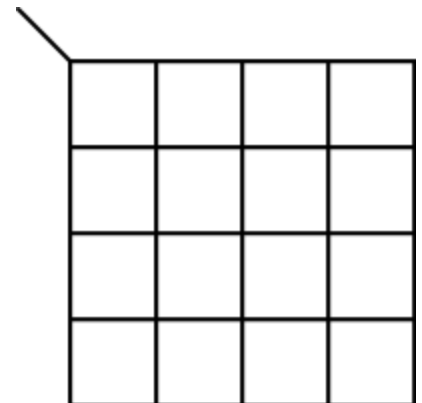
Q: In a simple copy machine, a stop signal, S, is to be generated to stop the machine operation and energize an indicator light whenever either of the following conditions exists: (1) there is no paper in the paper feeder tray; or (2) the two microswitches in the paper path are activated, indicating a jam in the paper path. The presence of paper in the feeder tray is indicated by a HIGH at logic signal P. Each of the microswitches produces a logic signal (Q and R) that goes HIGH whenever paper is passing over the switch to activate it. Design the logic circuit to produce a HIGH at output signal S for the stated conditions, and implement it using two input NAND gates only.   **(10 marks)**

No of Inputs: _____   **No of Outputs:** _____

Equation F: _____

Truth Table:

Draw neat and clean diagram otherwise a 0 will be awarded, label each output carefully.
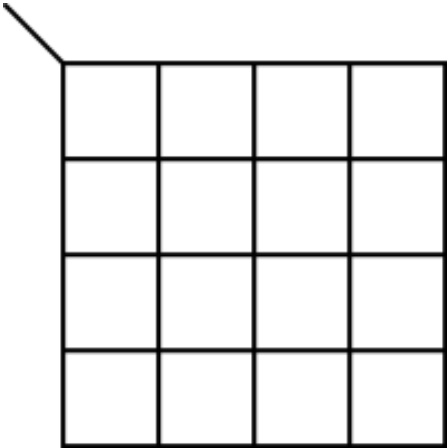
Q: An analog-to-digital converter is monitoring the DC voltage (VB) of a 12-V storage battery on an orbiting spaceship. The converter's output is a four-bit binary number, ABCD, corresponding to the battery voltage in steps of 1 V, with A as the MSB. The converter's binary outputs are fed to a logic circuit that is to produce a HIGH output if the binary value is greater than 6; that is, the battery voltage is greater than 6 V. Design this logic circuit.   **(10 marks)**

No of Inputs: _____

No of Outputs: _____

Equation F: _____

Truth Table:

Draw neat and clean diagram otherwise a 0 will be awarded, label each output carefully.