JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY-2012
PROGRAMMABLE LOGIC CONTROLLERS AND THEIR APPLICATIONS
(CONTROL SYSTEMS)

Time: 3hours   Max. Marks: 60

Answer any five questions
All questions carry equal marks
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1.a)   What are the components of a PLC?
   b)   What are the functions of PLC CPU? Explain their operational sequence.

2.a)   Explain a typical PLC output scheme
   b)   Design the operation of a drill press module and draw the necessary Ladder diagram.

3.a)   Explain the following
         i) AND gate and relay and PLC equivalents
         ii) NOR gate and relay and PLC equivalents
   b)   Discuss about ladder diagrams and sequence listings.

4.   What are the characteristics of PLC registers? Explain the function of any two types of PLC registers in detail.

5.a)   How many configurations are there for PLC counter functions? Explain.
   b)   Discuss the application of a dual counter for parts to be counted on a conveyor belt. Assume required design considerations.

6.a)   Explain the JUMP with NON-RETURN with an application.
   b)   Explain the FAL function of a PLC with a schematic of its operations.

7.a)   How do you change the status of bit pattern of a register? Explain.
   b)   Using a PLC sequencer and timing, explain the following dishwasher application.
         > Soap release solenoid
         >Input valve for hot water
         > wash impeller operation
         > Drain water valve
         >Drain pump motor
         >Heat element for drying cycle

8.   Write short notes on the following
          a) Input output devices connected to PLC
          b) PLC analog signal processing
          c) PLC Master control Relay

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