EJ – 764

VII Semester B.E. (E&E) Degree Examination, January 2013
(2K6 Scheme)
EE-705 : PROGRAMMABLE LOGIC CONTROLLER (Elective)

Time : 3 Hours Max. Marks : 100

Instruction : *Answer* ***any five*** *full questions.*

1. a) List the 5 major parts of a PLC system and describe the function of each of the 5 parts. **10**

   b) A factory has five section, each with its own process. One of the sections is in a building far away from the others. Programming alternations are required weekly for the processes. What kind of PLC system would you recommend and why ? Draw a layout block diagram of the system. **10**

2. a) Explain RACK and how it helps in communication between CPU and I/O module. **5**

   b) Differentiate data processing and a process control computer. **5**

   c) With neat block diagram, explain the PLC input and PLC output module layout. **10**

3. a) Explain in detail the use of retentive timer instruction with format and waveforms. **8**

   b) Explain the term redundancy. **4**

   c) Three output turn on at the same time. One stays on. Another, M, shuts off after 8 seconds. The third output, N, shuts off after 14 seconds. Develop a PLC ladder diagram and draw the related waveforms. **8**

4. a) Briefly explain the purpose of the user program portion and data table portion of a typical PLC memory map. **8**

   b) Explain accumulated and preset quantities associated with a PLC counter instruction. **4**

   c) A stacking and banding system (S) requires a spacer to be inserted (I) in a stack of panels after 14 sheets are stacked. After 14 more (28 total), the stack is to be banded (B). Add sensors and output devices as required. Develop a ladder diagram. **8**

P.T.O.

5. a) Explain with an example, move with mask instruction. **6**

   b) Draw and explain different types of data compare instructions. **8**

   c) Explain the operation of analog PLC. **6**

6. a) With a block diagram, explain generalized distributed control system architecture. **10**

   b) With a block diagram, explain manual back up (configuration 2) system design used in distributed control system. **10**

7. a) Develop a ladder diagram for a motor control circuit. **10**

   b) Explain 3 basic categories of designing a security features in distributed control system. **10**

8. a) Explain field bus standardization. How field bus technology is different from 4-20 ma technology ? **10**

   b) Explain 7 layers of reference model for protocols used in communication network. **10**

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