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Total No. of Pages : 01

Total No. of Questions : 08

**M.Tech. (Emb Sys) (Sem.-1)**  
**PLC & INDUSTRIAL AUTOMATION**  
**Subject Code : MTES-PE2B-18**  
**Paper ID : [75814]**

Time : 3 Hrs.

Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

- Q1 Explain the need of programmable logic controller (PLC). Explain the operation of various components of PLC controller. (6+6)
- Q2 Draw the interlace diagram between HMI panels and PLC. Give the examples of Local operator panel HMI and its advantages. (6+6)
- Q3 Describe the classification of input / output module. Explain different techniques for testing inputs and outputs at terminal. (6+6)
- Q4 Draw the block diagram of SCADA system with PLC as a remote terminal unit. (12)
- Q5 What do you mean by man-machine interface (MMI)? How it helps integration of DCS with PLC? (6+6)
- Q6 What type of licensing patterns used in the SCADA software? Write down types of Wonder ware SCADA packages. (6+6)
- Q7 Develop PLC Ladder Logic diagram for a start/stop of a motor using toggle switch. State its disadvantage. Explain with the Ladder Logic diagram how to overcome it using Start-Stop-Seal (Latch). (6+6)
- Q8 Draw and explain the structure of Industrial Automation with the help of neat diagram. (12)