Paper / Subject Code: 42704 / Process Automation

BE (INSTRU) sem-VII C-BSGS

(3 Hours)

10|12|18

(1/1)

[Total Marks: 80]

N.B: (1) Question No. **1** is compulsory.
    (2) Attempt any **Three** questions from remaining.
    (3) Figures to the right indicate full marks.

1. Answer the following: -   [20]
   a) List the technical necessity and state the expectations of automation.
   b) Explain the programming devices that are used to enter the program in PLC.
   c) What is data highway? Discuss the relative features of a data highway.
   d) With neat block schematic, explain the functions of RTU.

2. a) A railway station has 3 platforms A, B and C. A train is coming into the station.
   It has to be given entry to platform A if A is empty. If both A and B are occupied
   then it has to be given to platform C. If all the platforms are full, then the train has to wait.
   Design the necessary ladder logic diagram.   [05]
   b) Explain the various selection criteria that must be considered for selection of a suitable
   PLC for a specific process control.   [05]
   c) Explain sinking and sourcing input modules of PLC with neat diagram.   [10]

3. a) What is the need of DCS integrating with PLC and Computer?
   Explain the methods of integration.   [10]
   b) With neat block diagram, explain Hybrid control system architecture.   [10]

4. a) Explain with neat diagram, a system that allows an MTU to store data in central data store.   [10]
   b) What is Scan interval of SCADA?
   Explain the factors affecting the scan interval with examples.   [10]

5. a) What is ERP? Explain the typical modules of ERP.   [05]
   b) Explain the terms: - i) Alarm Suppression, ii) Alarm Rationalization.   [05]
   c) Explain IEC 61508 life cycle model.   [10]

6. Write note on: - **(Any Two)**   [20]
   a) Advanced PLC instructions.
   b) Hierarchical levels in any automated plant.
   c) MES and layers of communications between business and control system.

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