Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EIE) (2011 Onwards E-III) (Sem.–7,8)

DISTRIBUTED CONTROL SYSTEMS

Subject Code : DE-3.3

Paper ID : [A0379]

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

Q1 Answer briefly :

a) What size computers are needed for the DCS and supervisory control?

b) What are the requirements of a real time control system?

c) List the advantages of DCS.

d) What is the role of HMI in DCS?

e) List some of the field buses in use in the process industries.

f) Name the criterions used to evaluate the performance of a process control loop.

g) What is a reaction curve in process control?

h) Name the major parts of the DCS software.

i) What is the role of RTU in DCS?

j) What is MTBF in contest of DCS?

SECTION-B

Q2 Draw the schematic of a computer-process interface for a single and multi-loop control. Write the function of each hardware component.

Q3 Illustrates the operations that are executed by programming in a process control computer system.

Q4 Explain the architecture of the supervisory control with a neat sketch. Explain the function of each part in detail.

Q5 What is the role of Field bus in process control? Explain the important characteristics of a field bus.

Q6 List the advantages and the drawbacks of the different network access protocols.

SECTION-C

Q7 a) Describe the duties of the various levels of DCS. (7)

b) What is a trend display? What is its significance in process control environment? (3)

Q8 a) Explain in detail the ISO reference model. (7)

b) Compare the position and velocity algorithm. (3)

Q9 a) How a Programmable Logic Controller is interfaced with a DCS? (5)

b) Explain the organization of the programming languages for the computer process control. (5)