Printed Pages: 4 EIC-031

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 132851 Roll No. | | | | | | | | | | |

B. TECH.

Theory Examination (Semester-VIII) 2015-16

COMPUTERIZED PROCESS CONTROL

Time : 3 Hours *Max. Marks : 100*

Section-A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (2×10=20)

(a) Differentiate between distributed and computerized control system.

(b) Discuss the nature of common applications of computer in process control.

(c) Define a data acquisition system.

(d) Write the state equation and output equation for an nth order system.

(e) Explain the need of networking in industrial process.

(f) What do you mean by multiplexing? Differentiate between FDM and TDM.

(g) Compare linear and non linear system on the basis of their performance.

(h) What do you mean by mathematical model of a system, discuss with an example.

(i) Write the equation for digital PID controller.

(j) What is the necessity of signal conditioning in instrumentation system?

Section-B

2. Attempt any five questions from this section. (10×5=50)

(a) Describe Hierarchical computer control system. Enlist its advantages and disadvantages over centralized control system.

(b) What is real time operating system. Discuss any one type of real time operating system used in process control application.

(c) What do you mean by industrial communication system. Discuss HART protocol with function of its various layers.

(d) What do you understand by "Intelligent Control"? Give an example of any one type of Intelligent controller to control a plant.

(e) Describe process modeling. Discuss various steps involved steps involved in defining a process mathematical model.

(f) Explain TCP/IP reference model. Elaborate function of each layer.

(g) Write a short note on economy and benefits of Computer Aided process Control System.

(h) Describe inferential control system. Discuss all the steps empirically and analytically required to design and inferential controller.

Section-C

Note: Attempt any two questions from this section.

(15×2=30)

3. Write a short note on instrumentation involved in closed loop control of Power generation plant. Also discuss the function performed by computer in automatic thermal power plant.

4. Discuss the role of computer in industrial process environment. Discuss the implementation of computer controlled thickness and flatness control system for metal rolling plant.

5. Describe Adaptive control system. Give a practical example of Adaptive Process control system and show how to tune Adaptive controller.