NIC - 703

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

Paper ID : 2289451   Roll No.

B.TECH

Regular Theory Examination (Odd Sem - VII),2016-17
COMPUTERIZED PROCESS CONTROL

Time : 3 Hours   *Max. Marks : 100*

Section - A

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

1. a) Differentiate between continuous and batch control process.

    b) Why a correctly formulated model has no degree of freedom?

    c) What is the importance of Man-Machine Interface in CAPC system?

    d) Explain how computer is applied as controller in hot-air blower system?

    e) What is a Real Time Clock? How does it function?

    f) Write a note on element of CAPC system.

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    g) Explain with the suitable sketch, the top view architecture of an operating system?

    h) Give example of supervisory computer control system.

    i) What are different types of standard interfaces?

    j) Enlist different types of transmission techniques used for data transfer between two devices.

Section - B

Note: Attempt any five parts from this section.
                                    (5×10=50)

2. a) Explain with block diagram, a direct digital computer control system for chemical reactor.

    b) Develop a relationship for overall material balance, component material balance and energy balance for model formulation.

    c) Outline the general steps of the development of mathematical model for process control purposes.

    d) Discuss the different types of real-time application language for process control application. What are its features?

    e) What is an ISO Reference model? With a neat sketch discuss the structure of an ISO model? Explain the Data Link Layer of an ISO model in detail.

f) Derive a set of state variables that represents a dynamic system of a spring-mass-damper system.

g) Explain any two with suitable sketch

    a) Process model

    b) Physical model

    c) Control model.

h) What is an intelligent control for the process control and monitoring?

Section - C

Note: Attempt any two questions from this section.

(2×15=30)

3. Discuss in detail.

    a) Predictive control technique.

    b) Adaptive control technique.

4. Describe the following with proper bock diagram

    a) Thickness and flatness control system for metal rolling.

    b) Computer aided temperature control of electric oven.

5. Write short notes on

    a) Inferential control.

    b) Statistical control.

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