

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

PAPER ID : 0318

Roll No.

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B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION

2010-11

COMPUTERISED PROCESS CONTROL

Time : 3 Hours

Total Marks : 100

Note : (1) Attempt **all** questions.

(2) All questions carry equal marks.

(3) Be precise in your answer.

(4) No second answer book will be provided.

1. Attempt any **two** parts of the following : **(10×2=20)**
 - (a) Explain the role of computers in process control. Explain your answer with suitable examples.
 - (b) Classify computer-aided process control system with explanations.
 - (c) Discuss the distributed control system architecture.

2. Attempt any **two** parts of the following: **(10×2=20)**
 - (a) Discuss the Data Transfer Techniques in Industrial control system.
 - (b) Discuss in detail the real time operating system for process control.

- (c) How many types of computer control process software are used ? Discuss one of them.

3. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Differentiate between physical model and control model. Explain each of these.
- (b) A system is described by the following set of state equations :

$$\frac{dx_1}{dt} = f_1 (m_1, m_2, d_1, d_2) \text{ and}$$

$$\frac{dx_2}{dt} = f_2 (m_1, m_2, d_1)$$

Find the degree of freedom for the system at its dynamic state and steady state. Are they equal ? If not, why ?

- (c) What is modeling procedures ? Explain.

4. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Discuss the Predictive control. How it is different than Adaptive control ?
- (b) Write all the steps empirically and analytically required to design and inferential controller.
- (c) Describe in detail about the statistical control with an example.

5. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Explain with neat diagram the temperature control of an electric oven.
- (b) Explain with neat diagram the thickness and flatness control of a metal rolling process.
- (c) Explain the reheat furnace temperature control with diagram.