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BTECH
(SEM VIII) THEORY EXAMINATION 2024-25
COMPUTERIZED PROCESS CONTROL

TIME: 3 HRS**M.MARKS: 100**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt *all* questions in brief.

2 x 10 = 20

Q No.	Question	CO	Level
a.	Mention two economic benefits of using computers in process control.	1	K1
b.	What is a real-time operating system (RTOS)? Why is it used?	2	K2
c.	List any two standard industrial communication protocols.	2	K1
d.	Explain pulse and analog interfaces in brief.	1	K2
e.	What is the difference between physical and control models?	3	K4
f.	Define model validation in process modeling.	3	K2
g.	What is cascade control? Where is it commonly used?	4	K2
h.	State one application each of inferential and intelligent control.	4	K3
i.	Write a short note on electric oven temperature control.	5	K2
j.	Mention any two key challenges in computer-aided power generation control.	5	K2

SECTION B

2. Attempt any *three* of the following:

10 x 3 = 30

Q No.	Question	CO	Level
a.	Describe the architecture of hierarchical computer-aided process control systems with a diagram.	1	K2
b.	Describe the structure of an industrial communication network and its importance.	2	K2
c.	Discuss the step-by-step modeling procedure for process control.	3	K3
d.	Elaborate on predictive control and its advantages.	4	K4
e.	Describe the computerized temperature control system of an electric oven with a neat diagram.	5	K2, K4

SECTION C

3. Attempt any *one* part of the following:

10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain the classification of computer-aided process control systems.	1	K2
b.	Discuss the economics and advantages of using computer-aided process control in industries.	1	K2

4. Attempt any *one* part of the following:

10 x 1 = 10

Q No.	Question	CO	Level
a.	Explain various data transfer techniques used in industrial automation systems.	2	K2
b.	Describe types of software used in computerized process control systems.	2	K2



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5. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Compare and contrast physical models and control models.	3	K4
b.	Explain how model formulation and solution finding is done in process modeling.	3	K3

6. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Discuss adaptive control and its implementation in dynamic systems.	4	K3
b.	Explain the concept of inferential control and provide an industrial example.	4	K3

7. Attempt any *one* part of the following: 10 x 1 = 10

Q No.	Question	CO	Level
a.	Discuss the role of computers in the control of reheat furnace temperature.	5	K4
b.	Explain the computerized system for thickness and flatness control in metal rolling industries.	5	K4

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