

Total No. of Questions : 10]

SEAT No. :

P3690

[5561]-325

[Total No. of Pages : 2

B.E. (Chemical)

PROCESS DYNAMICS & CONTROL

(2012 Course) (409341)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.

Q1) a) A thermometer is given an impulse change of magnitude of 10. The time constant of the thermometer is 6 seconds. Sketch the response of the thermometer assuming it to be a first order system. **[5]**

b) Derive dynamic response of first order system. **[5]**

OR

Q2) Discuss in detail about the various forcing functions. **[10]**

Q3) Using the Routh criterion, explain for stability of **[10]**

$$GH = \frac{K(S+2)}{S(S+3)(S+4)}$$

OR

Q4) Derive transfer function for non-interacting capacities. **[10]**

Q5) a) Draw asymptotic Bode diagram for $GH = \frac{(1+S)}{(0.1S+1)(10S+1)}$ Explain for stability. **[10]**

b) Explain and draw the Nyquist plots for Pure dead time and Pure Capacitive process. **[6]**

OR

P.T.O.

Q6) Draw Bode diagram for **[16]**

- a) First Order system
- b) Second Order system
- c) P1 controller
- d) Pure Dead System

Q7) Explain the need of Cascade Control System with suitable example and explanation. **[18]**

OR

Q8) a) Explain Override Control systems. **[8]**

b) Explain the logic behind feed forward control system. **[10]**

Q9) Explain the reconstruction of continuous signals from their discrete time values. Explain with proper diagrams. **[16]**

OR

Q10)a) Explain about the centralized control system to control a process. **[8]**

b) Explain working of Distributed Control System. **[8]**

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