Process Dynamics and Control

BE (Chemical with MBA) and FT 7th Semester

Max Marks: 25, Time: 60 min.

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Instructions

1. Please write your roll number, class and name at the top of all the pages'/answer sheets.
2. Scan all the pages'/answer sheets as a single pdf file and upload the same in google classroom.
3. Attempt all questions.
4. Assume missing data, if any, reasonably.

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I Draw the root locus diagram for the control system having an open loop transfer function given below. Show all the steps involved. Also determine the value of controller gain for which the system is critically damped using magnitude criteria. (CO3) (10)

$$G_{OL}(s) = \frac{(s+2)}{(s+1)(s^2+6s+10)}$$

II With the help of neat and labelled diagram, explain various configurations of Ratio control. Discuss various industrial applications of ratio control. (CO4) (8)

III Plot the Bode diagram for the system whose open loop transfer function is given below, where the controller gain is 50. (CO3) (7)

$$G_{OL} = \frac{K_c}{s}\frac{1}{s+1}$$