



PRESIDENCY UNIVERSITY, BENGALURU
SCHOOL OF ENGINEERING

Max Marks: 30

Max Time: 55 Mins

Weightage: 15 %

Set A

TEST 03

II Semester 2016-2017

Course: ECE/EEE A 206 Control Systems

19 April 2017

Instructions:

- i. Write legibly
- ii. Scientific and non-programmable calculators are permitted

Part A

(2 Q x 6 M = 12 Marks)

- 1) Derive steady state Error.
- 2) For a system

$$G(s)H(s) = \frac{K}{s^2 (s+2)(s+3)}$$

Find the value of K to limit steady state error to 12, when input to system is $1+10t+(40/2)t^2$

Part B

(1 Q x 8 M = 8 Marks)

- 3) The open loop transfer function of a unity feedback system is

$$G(s) = \frac{1}{s(1+0.5s)(1+0.1s)}$$

Find the gain margin and the phase margin using Bode plot

Part C

(1Q x 10 M = 10 Marks)

- 4) With a neat waveform explain the following transient response specifications
a) Delay time b) Rise time c) Peak time d) Peak overshoot e) Settling time



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TEST 2

II Semester 2016-2017

Course: ECE/EEE A 206 Control Systems

22 march 2017

Instructions:

- i. Write legibly
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Part A

(2 Q x 6 M= 12Marks)

1. Find the stability of the system. $F(s)=S^6+2S^4+3S^3+6S^2+2S+1=0$
2. Comment on the stability of the system $F(s)= S^6+4S^5+3S^4-16S^2-64S-48=0$

Part B

(1 Q x 8 M= 8 Marks)

- 3 Determine the range of K for stability if $G(S)=\frac{K}{(S-4)(S+5)}$ as shown in fig 1

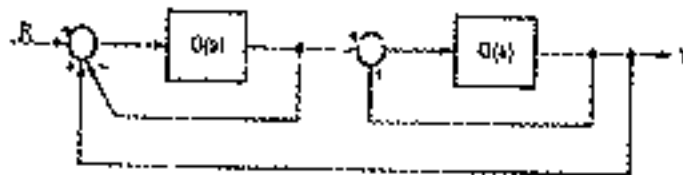


Figure 1

Part C

(1Q x 10 M= 10 Marks)

- 4 The open loop transfer function of a control system is given by $G(s) = \frac{K}{s(s+2)(s^2+6s+25)}$
Sketch the Complete Root Locus as k is varied from 0 to ∞



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TEST 1

II Semester 2016-2017

Course: ECE/EEE A 206 Control Systems

22 Feb 2017

Instructions:

- i. Write legibly
- ii. Scientific and non-programmable calculators are permitted

Part A

(2 Q x 6 M= 12Marks)

1. What is closed loop system, write advantages and disadvantages of closed loop system.
2. Derive the transfer function of simple closed loop system

Part B

(1 Q x 8 M= 8 Marks)

3. Use Masons gain formula to find Y_5/Y_1 for the signal flow graph as shown in fig 1

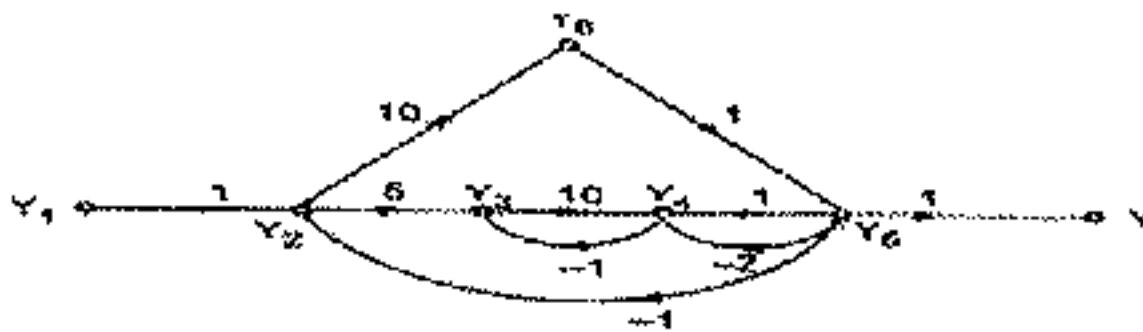


Figure 1

Part C

(1Q x 10 M= 10 Marks)

4. A) Draw the equivalent mechanical system of the given system. Hence write the set of equilibrium equations for it and obtain electrical analogous circuits (Fig 2) using
 - i. F-V analogous OR ii. F-I analogous

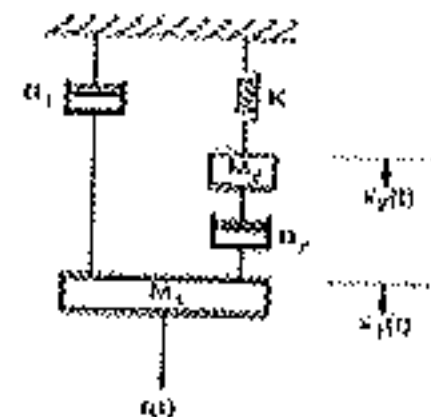


Figure 2

- B) Write the block diagram reduction rules