Correction attached.
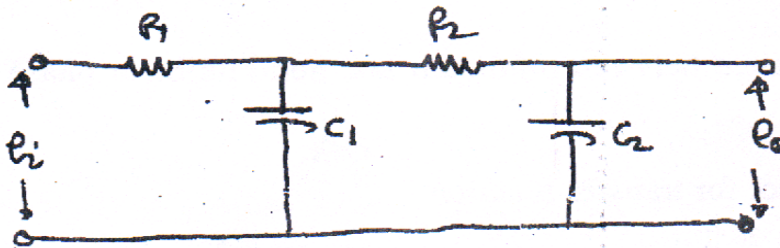
10/12/14

(OLD COURSE)

QP Code : **12153**

(3 Hours)

[Total Marks : 100

N.B. : (1) Question No. 1 is **compulsary.**
   (2) In total solve **five** questions.
   (3) Figures to the right indicate full marks.
   (4) Assume suitable data if necessary.

1. (a) Find the transfer function of system shown.   10

   (b) Differentiate between open loop and closed loop system with suitable examples. 10

2. (a) A unity feedback system has   10

   $$G(s) = \frac{50(s+1)}{s(s+2)(s+3)}$$ (s+1)

   determine the system type, error coefficients and error when ramp input 4t is applied, where t is the time.

   (b) Compare frequency and time domain specifications.   10

3. (a) For unity feedback system   10

   $$G(s) = \frac{K}{s(1+0.4s)(1.0.25s)}$$

   Find range of K, marginal value of K and frequency of sustained oscillations.

   (b) Sketch the polar plot and discuss the stability of system represented by   10

   $$G(s)H(s) = \frac{K}{s(s+1)(s+5)}$$

4. (a) Discuss the stability of the system using Nyquist plot for   10

   $$G(s)H(s) = \frac{50}{s(1+0.1s)(1+0.2s)}$$

   (b) A second order system has 50% overshoot and settling time of 3 sec. Determine   10
   w_n, ξ, t_p and t_r.

LM-Con. 10932-14.

TURN OVER