

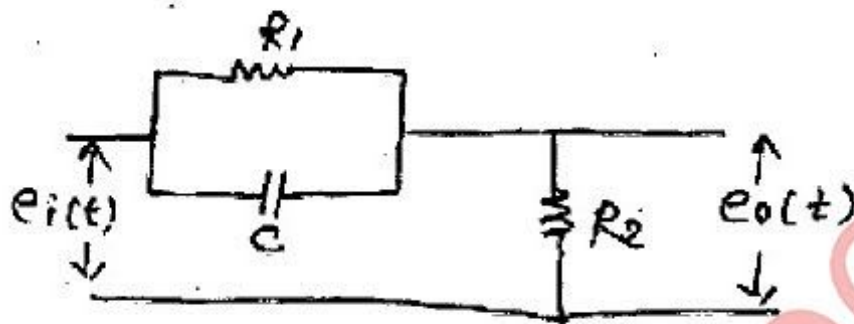
(3 Hours)

[Total Marks : 80

- N.B. : (1) Questions No. 1 is compulsory.
 (2) Attempt any three from Q. 2 to Q 6.

1. Attempt any five (4 Marks each)

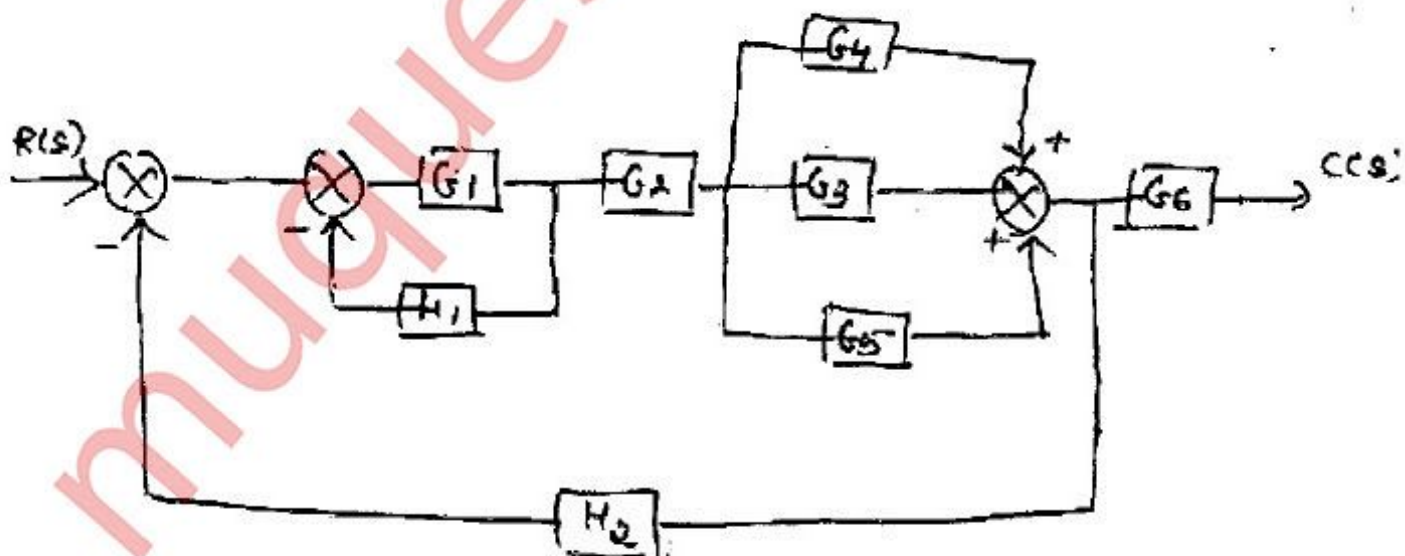
(a) Find T.F. (Transfer function)



- (b) Compare analog phasemeter and digital phase meter
 (c) Derive Transfer function of closed loop system.
 (d) Why delay lines are required in CRO
 (e) Differentiate open loop and closed loop system.
 (f) Discuss intensity modulation and velocity modulation related to CRO.

2. (a) Explain DSO in detail.

(b) Find $\frac{C(S)}{R(S)}$



[TURN OVER]

3. (a) Explain function generator in detail. 10
 (b) (i) Determine whether System is stable or not? 5
 $s^5 + s^4 + 2s^3 + 2s^2 + 3s + 15 = 0$
 (ii) Find k_{mar} , w for system $s^4 + 3s^3 + 3s^2 + 2s + k = 0$ 5

4. (a) Describe working of R-2R ladder DAC. 10

- (b) A second order system is given by $\frac{C(S)}{R(S)} = \frac{64}{s^2 + 5s + 64}$ 10

Find (i) w_n (ii) ξ (iii) w_d (iv) T_p

5. (a) Explain working of Ramp types Digital Voltmeter. 10
 (b) Sketch Root locus for system having. 10

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

6. (a) Draw magnitude, Phase plot for following function 12
 Calculate w_{gc} , w_{pc} , G_m , p_m

$$G(s)H(s) = \frac{80}{s(s+2)(s+20)}$$

- (b) Find $\frac{C(s)}{R(s)}$ using Mason's gain formula. 8

