

Total No. of Questions :6]

SEAT No :

P179

APR -17/ TE/Insem. - 15

[Total No. of Pages :3

**T. E. (Electrical)
CONTROL SYSTEM-I
(Semester - II) (2012 Course)**

Time : 1 Hour]

[Max. Marks : 30

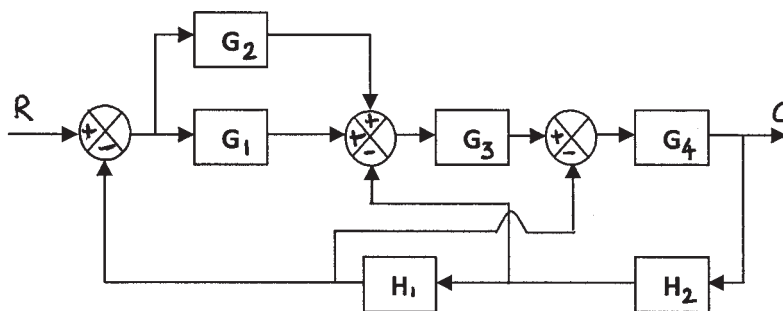
Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.

Q1) a) Compare: [4]

- i) Feedback & Feed forward control system.
- ii) Open loop & Closed loop control system.

b) Obtain the overall transfer function for a system represented by a block diagram. [6]



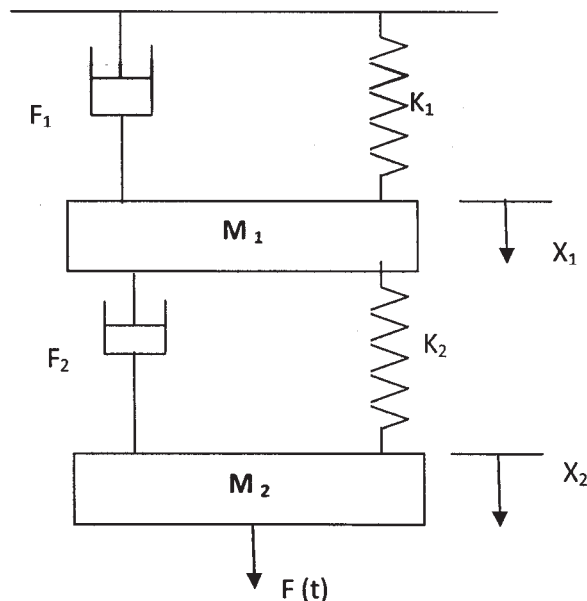
OR

Q2) a) Define: [4]

- i) Transfer Function.
- ii) Pole & Zero of a system.

P.T.O.

- b) Obtain a mathematical model for the mech. system shown. Write DE, using F-V analogy. Draw equivalent mechanical circuit. [6]



Q3) a) What is lead network? Obtain the TF of lead network. [4]

b) Obtain the block diagram representation of AC servomotor. [6]

OR

Q4) a) Write a short note on Synchro Transmitter receiver. [6]

b) Explain AC tachogenerator. [4]

Q5) a) Write the expression for closed loop TF for First order system and the effect of time constant on system performance. [4]

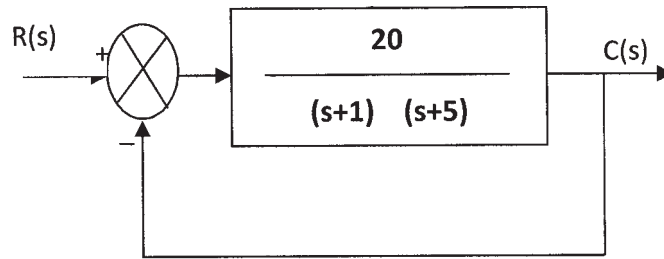
b) A unity feedback sys. is characterised by an open loop.

$$TF = K/s (s+10)$$

Determine the gain K so that the system will have a damping ratio of 0.5. for this value of K determine settling time, Peak overshoot & time to peak overshoot for a unit step input. [6]

OR

- Q6) a)** The block diagram for a unity feedback control system is shown in fig. [6]



Determine the characteristic equation of the system, ω_n , ξ , ω_d , t_p , M_p , the time at which the first overshoot occurs, the time period of oscillations and the number of cycles completed before reaching the steady state.

- b) Define Static error constant & write the expression for them. [4]

