P83

APR. -16/TE/Insem. - 15
T.E.(Electrical)
CONTROL SYSTEM-I
(2012 Course) (Semester - II) (303147)

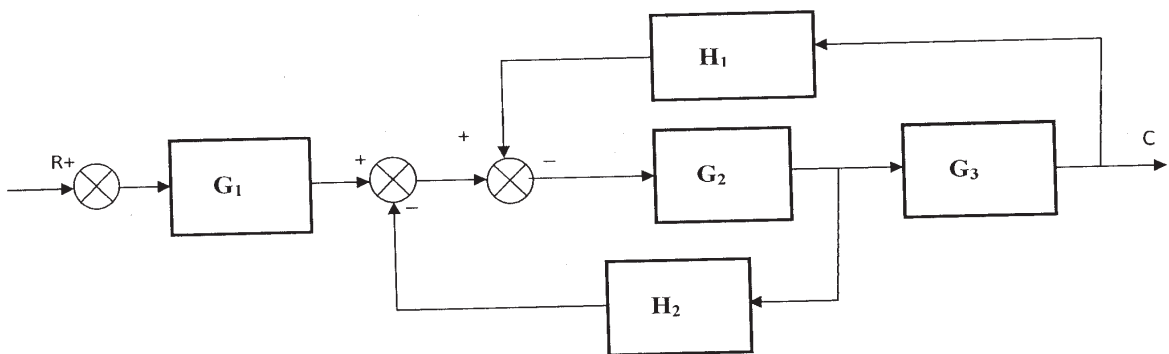*Time : 1Hour]*   *[Max. Marks :30*

Instructions to the candidates:

1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.*
2) *Neat diagrams must be drawn whenever necessary.*
3) *Figures to the right indicate full marks.*
4) *Your answers will be valued as a whole.*

Q1) a) Classify open loop and close loop system with their advantages and limitations. **[4]**
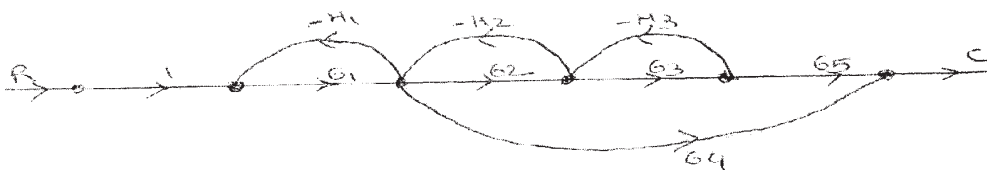
b) Find transfer function for following figure. **[6]**

OR

Q2) a) State and explain Masons gain formula. **[4]**

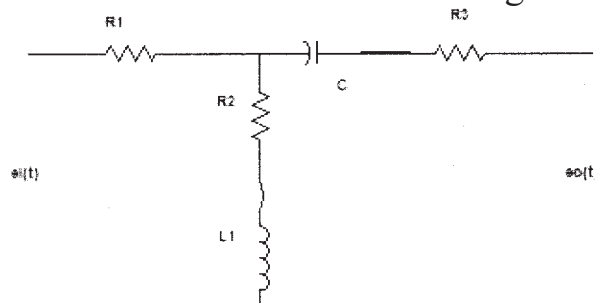b) Find transfer function using Mason's gain formula for following system. **[6]**

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Q3) a) Derive transfer function for separately excited DC shunt motor. **[7]**

b) Explain force voltage analogy. **[3]**

OR

Q4) a) Derive transfer function for following electrical system **[6]**

b) Explain gear train and how they are modelled. **[4]**

Q5) a) Draw time response of standard second order system and explain time response specifications. **[5]**

b) For a unity feedback systems having open loop transfer function as

G(s)= $\dfrac{24(s+2)}{s(s^2+7s+12)}$ Determine. **[5]**

i) Type of system

ii) Error constants Kp, Kv and Ka

iii) Steady state error for step input.

OR

Q6) a) A unity feedback system is characterized by an open loop transfer function

G(s) = $\dfrac{k}{s(s+10)}$ Determine the gain K so that the system will have damping ratio of 0.7.For this value of K determine settling time, peak overshoot and time to peak overshoot. **[6]**

b) What are different standard test signals draw them and find their laplace transform. **[4]**

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