Total No. of Printed Pages:2

SUBJECT CODE NO:- P-50
FACULTY OF ENGINEERING AND TECHNOLOGY
B.E.(MECH] Examination May/June 2017
Automatic Control System
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

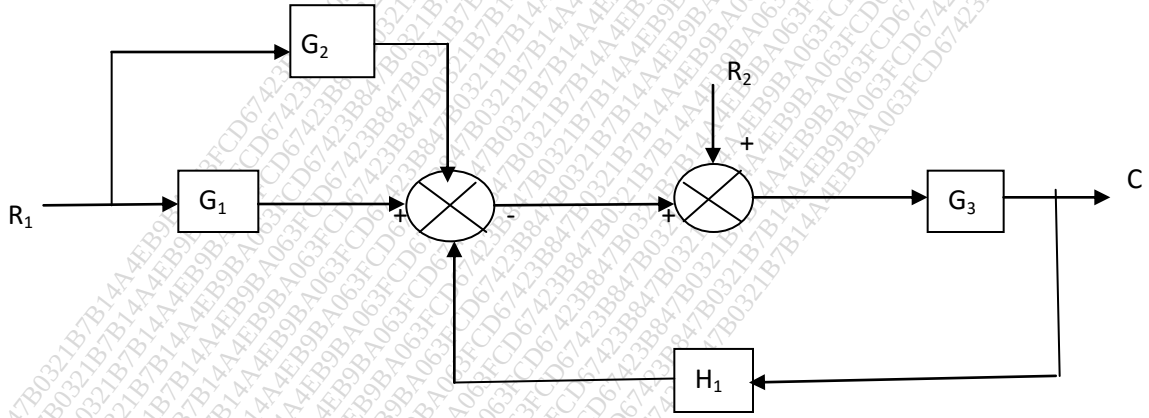
N.B i) Solve any three questions from each section.
ii) Draw neat sketches if required.
iii)Assume suitable data if required.

Section A

Q.1 a) Define Transfer function of control System and also write the properties of Transfer function. 07
b) Write down the Advantages of Automatic Control System. 06

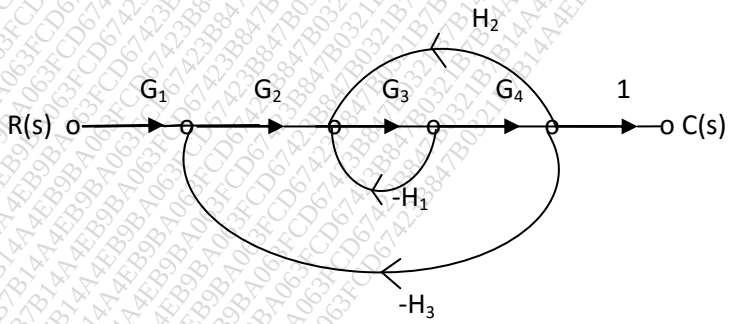
Q.2 a) Explain in detail Force-Voltage analogy. 07
b) Write a short note on Electrical System. 06

Q.3 a) Determine the transfer functions C/R_1 & C/R_2 from the block diagram shown in fig. 09



b)Write down the significance of Block diagram reduction technique 05

Q.4 a)For the SFG shown in fig. Determine T.F 07



b) Explain Pneumatic Nozzle – Flapper Amplifier. 06

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Q.5 a) Explain Hydraulic Proportional Controller. 07

b) Compare between A.C & D.C servo motor. 06

Section B

Q.6 a)Differentiate between Transient and Steady State response. 07

b)Derive the equation for unit step response of First order system. 06

Q.7 a)Given the T.F G(s) = $\frac{200}{s^2+30s+200}$ 07

Find the Peak time, % overshoot , Ts and Tr.

b)Write a Short Note on Effect of Damping ratio on response of second order system. 06

Q.8 a) Write a Short Note on Polar Plots. 06

b)A unity feedback system has G(s) = $\frac{K(s+1)}{s^2(s+2)(S+5)}$ using Routh's criteria find range of K for the system to be stable. 07

Q.9 a)For the system having open loop .T.F 10

G(s)H(s)= $\frac{10}{S(s+1)(s+10)}$. Determine stability of system by plotting Bode Plot.

b)What are log scales? 03

Q.10 a)Write a Note on Application of MATLAB software in Control System. 05

b)Sketch the root locus diagram for a control system having 09

G(S) = $\frac{K(s+4)}{S(s^2+6s+13)}$ & H(S) = 1