Total No. of Printed Pages:2

SUBJECT CODE NO: H-338
FACULTY OF SCIENCE AND TECHNOLOGY
B.E. (Mechanical)
Automatic Control System
(REVISED)

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

Please check whether you have got the right question paper.

N.B
1) Solve any three questions from each section.
2) Draw neat sketches if required.
3) Assume suitable data, if necessary.

Section A

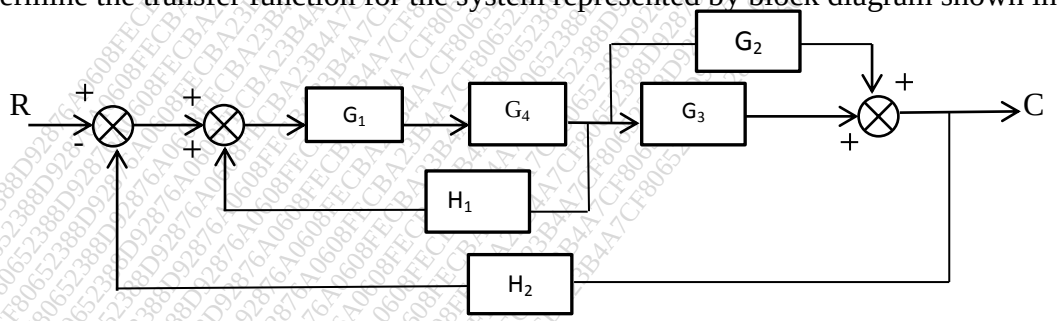
Q.1 a) What is Control system? Differentiate between Open Loop Control system and closed Loop control system. 07

b) Define Transfer function of control system. What is its importance? 06

Q.2 a) Explain in detail Force voltage analogy. 07

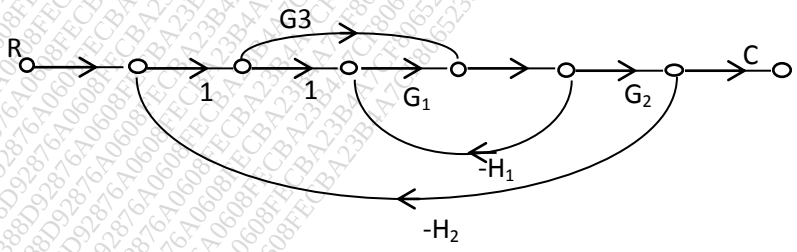
b) Write a short note on Thermal system. 06

Q.3 a) Determine the transfer function for the system represented by block diagram shown in fig. 07



b) Differentiate between Block Diagram and SFG. 06

Q.4 a) Determine the transfer function of the system in fig. 07



b) Explain Proportional Control action with an example. 06

Q.5 Write short notes on.(Any Two) 14

a) P.I.D controller.
b) Stepper motor.
c) Hydraulic controllers.

Section B

Q.6 a) Explain time constant in detail. 06

b) Derive the equation for unit ramp response of first order system. 07

Q.7 a) Give the T.F., $G(S)=\frac{50}{s^2+8s+50}$. Determine Peak time, % overshoot T_S and T_r. 07

b) Explain time domain specifications. 06

Q.8 a) Write a short note on concept of stability. 06

b) Determine the stability for $4s^4+10s^3+10s^2+4s+2$. 07

Q.9 a) For the unity feedback control system $G(S)=\frac{10}{s(s+1)(s+3)}$. Sketch the bode plot & determine the gain and phase margin. 09

b) Write down the advantages of frequency domain analysis. 04

Q.10 a) Draw the Root Locus for the following system $G(S).H(S)=\frac{K}{s(s+7)(s+9)}$. 10

b) Write a short note on Root Locus. 04