SESSION : 2011 SEMESTER,
B.TECH......5ⁿ SEMESTER
SUBJECT... Control System Engineering ....(DEPTT CODE)......EC 331..........
FULL MARKS : 30

This question paper contains   02   pages

Duration of Examination : 2 hours   Answer all....Questions
Figures at the right hand margin indicate marks
All parts of a question should be answered at one place.

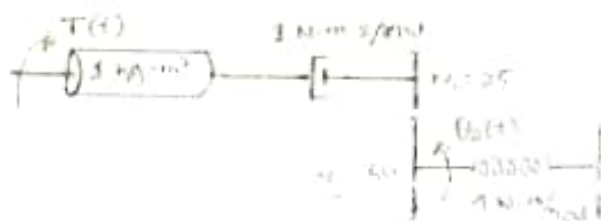| Q.No.		Marks
1 a)	Determine system equation of the system shown in figure-1. Draw f-v analogen	05

fig-1

| b) | | 05 |

Fig-2

Find the T.F $G(s)= \frac{\theta_2(s)}{T(S)}$ for the rotational Mechanical system with gears
Shown in fig-2

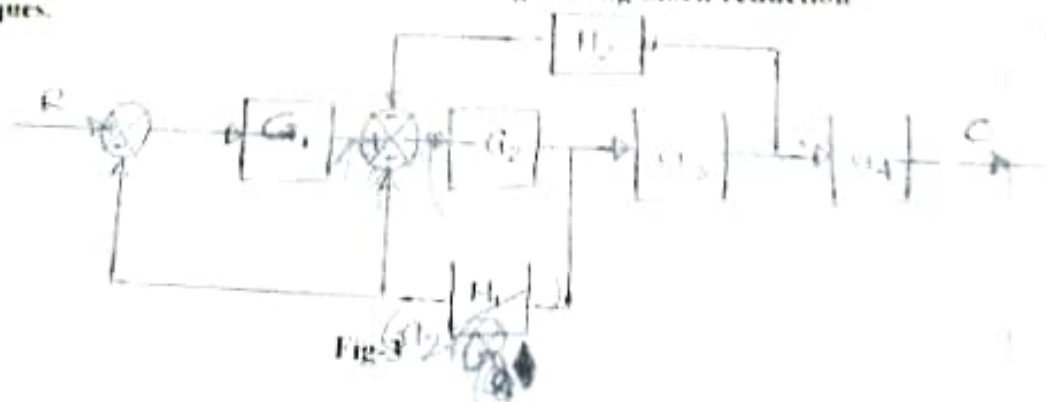| 2 a) | Obtain the T.F of the block diagram shown in fig-3 using block reduction Techniques. | 05 |

Fig-3

Signature of the paper setter...................

b) Find the T.F of the system shown in fig-4 using Mason's gain formula.
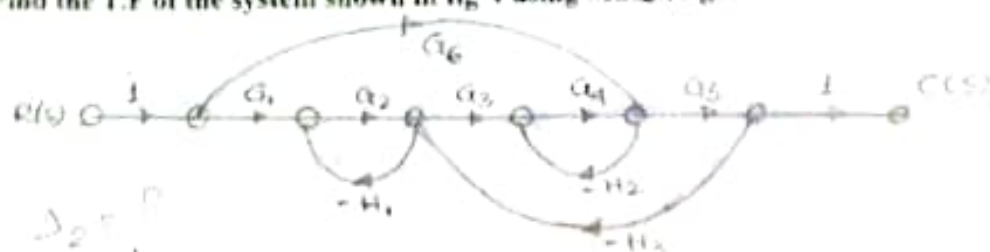

Fig-4

3 **a)** For fig-5 shown below, determine the following   06
- **i)** the value of A so that overshoot will be 1.9%
- **ii)** the steady state error of the system for a unit step input.
- **iii)** K, and steady state error for input $v(t) = t$
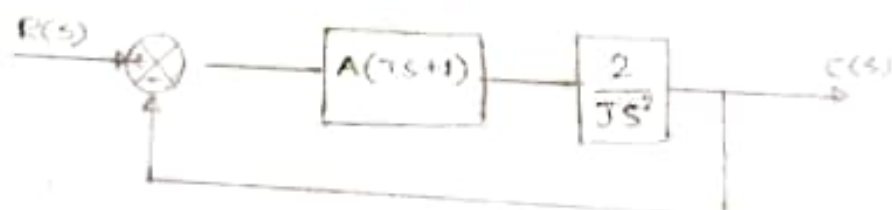 Assume T = 5 sec. J = 1500 Kg m^2

Fig-5

b) Examine the stability of $S^5 + 2S^4 + 4S^3 + 8S^2 + 3S + 1 = 0$ using Routh's criteria.   04