DEPARTMENT OF MECHANICAL ENGINEERING

CLASS:- TE ME - 1	SEM:- V
SUBJECT:- MMC	DATE:- / 09 / 2016
DURATION:- 60 min.	MARKS:- 20

CLASS TEST 01

Q.01 Attempt any two: (08 Marks)

a)	Explain types of control system in detail	(04)
b)	Derive an expression for coupled tank Fluidic system	(04)
c)	Elucidate s-plane concept in detail	(04)

Q.02 Attempt any two: (12 Marks)

a)	Derive differential equation for given mechanical system	(06)

b)	Find the transfer function for given state space representation	(06)

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} -2 & 3 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u.$$

&

$$y = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

c)	Sketch the Root Locus and comment on stability	(06)

$$G(s) = \frac{K(s+3)}{s(s^2 + 6s + 8)}$$