Vivekananda College of Engineering & Technology,Puttur
[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

CRM08	Rev 1.10	EC	22/5/21

CONTINUOUS INTERNAL EVALUATION– 1

Dept:EC	Sem / Div:4A&B		Sub:Control Systems	S Code:18EC43
Date:25/05/21	Time: 9:30-11:00 AM		Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

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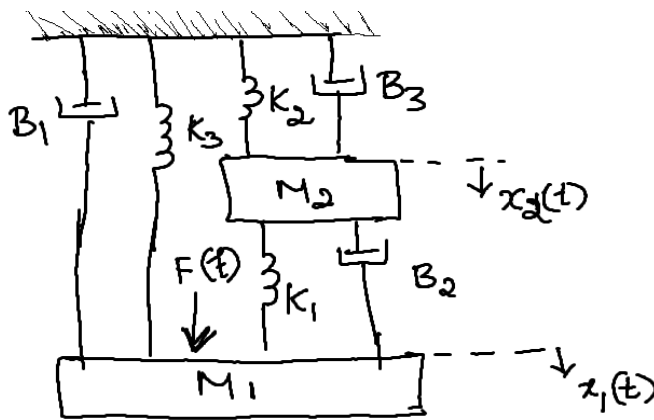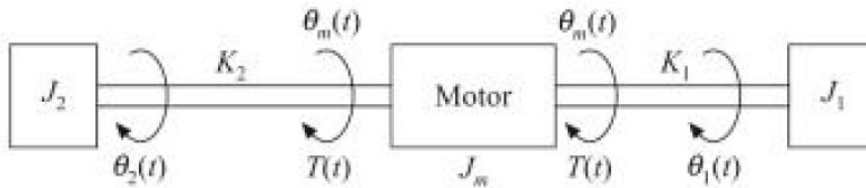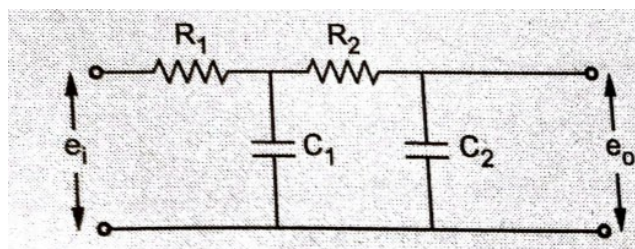| QN		Questions	Marks	RBT	COs
		PART A			
1	a	Draw the general block diagram of automatic control system and explain with example	7	L2	CO1
	b	For a mechanical system shown in fig 1.b write the differential equation for the system and obtain the force voltage analogous electrical network. Fig 1.b	9	L3	CO1
	c	Write the torque equation of the rotational system shown in fig 1.c. Find the transfer function $\theta_1(s)/ T(s)$ Fig 1.c	9	L3	CO1
		OR			
2	a	With help of neat block diagram differentiate open loop and closed loop control systems	7	L2	CO1
	b	Find $Eo(s)/Ei(s)$ for the system given in Fig. 2.b Fig 2.b	6	L3	CO1
	c	Define Analogous system . Show that the two systems are analogous by	12	L3	CO1

Prepared by: Mrs Sowmya Anil/ Mrs Prabha G S   HOD

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CONTINUOUS INTERNAL EVALUATION– 1

comparing their transfer functions.
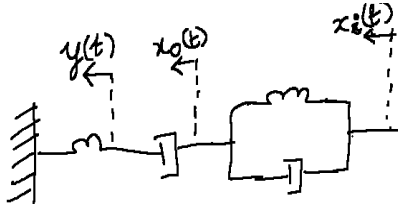
Fig 2.c1 Mechanical system	Fig 2.c2 Electrical system

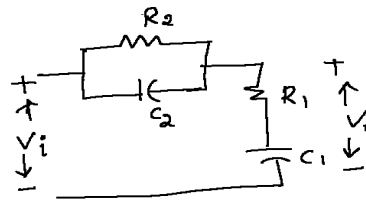### PART B

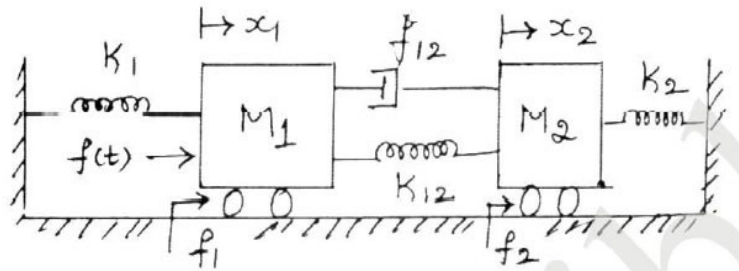| 3	a	Draw the mechanical network and write the differential equation for the system in Fig 3.a. Draw the electrical network based on Force voltage and Force current analogy.	10	L3	CO1

Fig 3.a

	b	What is block diagram representation? Drive the transfer function of a closed loop system.	6	L2	CO1

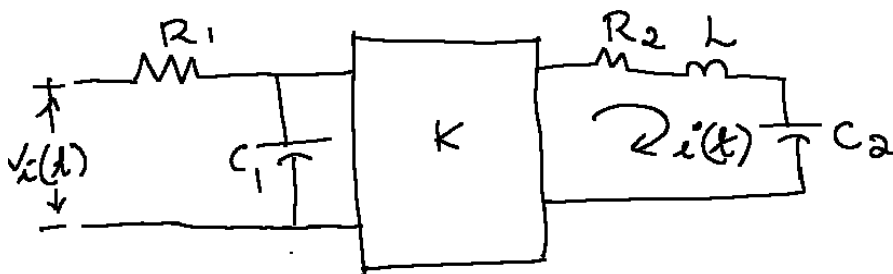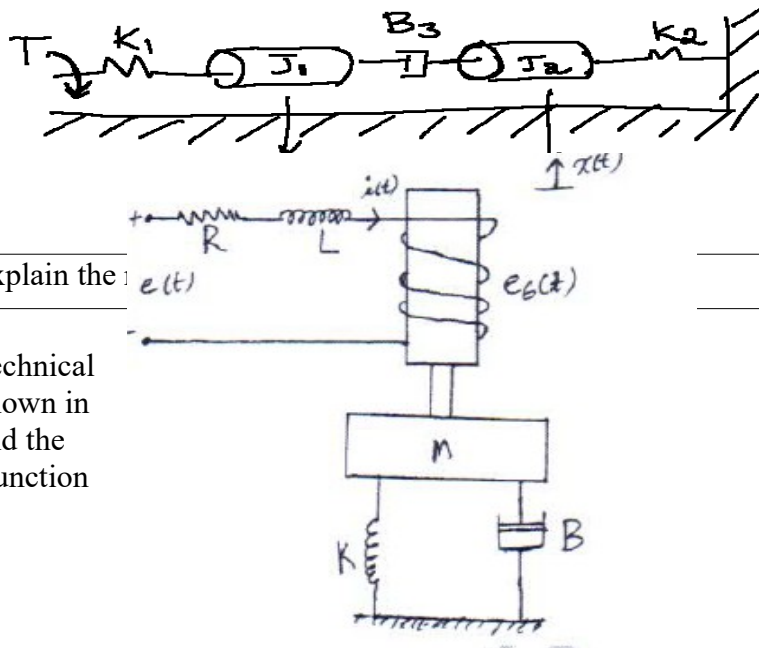|	c	Find the transfer function I(s)/ Vi(s) for the circuit shown below, where K is the gain of the amplifier	9	L3	CO1

Fig 3.c

OR

4	a	For the mechanical system shown i) Draw the equivalent mechanical network ii) the mechanical equations iii) Draw the Torque voltage analogous and the equation.	10	L3	CO1

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CONTINUOUS INTERNAL EVALUATION– 1

b	Briefly explain the		6	L2	CO1
c	For the electromechnical system shown in fig 4.c find the transfer function X(s)/E(s)		9	L3	CO1

Fig 4.c