

# Model Question Paper-1/2 with effect from 2021(CBCS Scheme)

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## 7th Semester B.E. Degree Examination CONTROL ENGINEERING

TIME: 03 Hours

Max. Marks: 100

- Note: 01. 02. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
03.  
04.

Module -1			*Bloom's Taxonom y Level	CO s	Mark s
Q.0 1	a	Explain the closed loop control system in the Missile Launch System with a neat sketch	L2	1	6
	b	Explain the following with examples: <ul style="list-style-type: none"> <li>• Open loop control system</li> <li>• Classification of control systems</li> </ul>	L2	1	8
	c	Explain the requirements of a ideal control system	L2	1	6
OR					
Q.0 2	a	Explain the transfer function models in mechanical system with example	L2	1	6
	b	Explain the AC motors in control systems	L2	1	6
	c	Explain the Force- Voltage and Force – Current analogy	L2	1	8
Module-2					
Q. 03	a	Calculate the transfer function for the signal flow graph	L3	2	8
	b	Derive the transfer function of a Simple closed loop control system (Canonical Form)			
	c	Calculate the transfer function for the following by resolving the block diagram using its rules	L3	2	8
OR					

Q.04	a	Explain the different types of standard test inputs	L2	2	6
	b	Derive the TYPE 0,1 & 2 responses for G(S)H(S) for RAMP input	L3	2	8
	c	Explain the concept of time concepts	L2	2	6
<b>Module-3</b>					
Q.05	a	Draw the root locus for the following $G(S)H(S) = \frac{K}{s(s+2)(s+4)}$	L3	2	15
	b	Explain the Routh-Hurwitz criteria	L3	2	5
	c				
OR					
Q.06	a	Sketch the bode plot for the following $G(S)H(S) = \frac{800(S+2)}{s^2 \times 10(S+10)(S+40)}$	L3	2	15
	b	Explain the importance of Bode plots	L2	2	5
	c				
<b>Module-4</b>					
Q.07	a	Derive the relationship between time domain and frequency domain for second order equations	L3	3	10
	b	Explain the advantages and limitations of frequency response functions	L2	3	10
	c				
OR					
Q.08	a	Draw the polar plot for $G(S)H(S) = \frac{1}{s(1+T_1s)(1+T_2s)}$	L3	3	6
	b	Draw the Nyquist plot for $G(S)H(S) = \frac{K}{s(s+2)(s+4)}$	L3	3	14
	c				
<b>Module-5</b>					
Q.09	a	Explain the Propotional controllers	L3	3	10
	b	Explain the Lead-Lag Compensators	L3	3	10
	c				
OR					
Q.10	a	Explain the advantages and disadvantages of state variable representations over conventional transfer functions	L2	3	10
	b	Explain the state transition matrix with its properties	L2	3	10
	c				

\*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.