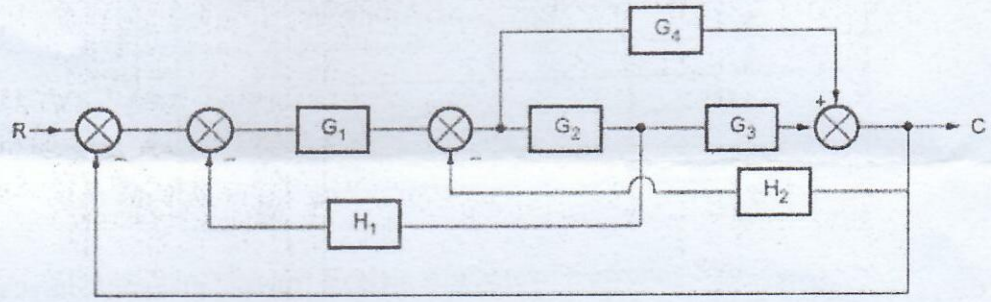
T.E. Sem-IV (ECS) (C-Scheme) May/2026 16/5/2026

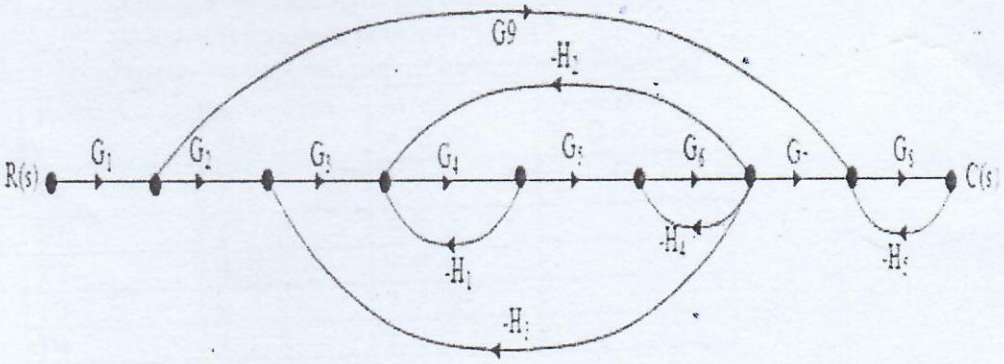
Duration: 3hrs **[Max Marks: 80]**

N.B.: (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any **FOUR**	[20]
	a	Compare USB and GPIB and its working.	[5]
	b	Explain servomechanisms.	[5]
	c	Calculate unit step response for a first order system.	[5]
	d	Describe the Selection criteria of transducers.	[5]
	e	Illustrate the fibre optic instrumentation.	[5]
	f	Explain Field Bus bus in detail	[5]
2	a	For the given block diagram obtain equivalent T.F. by block diagram reduction technique.	[10]



	b	Draw the Nyquist Plot and comment on stability $G(S)H(S) = \frac{K}{S(S-2)}$	[10]
3	a	Determine the transfer Function	[10]



b Find the value of K and A by Routh Criterion for a unity feedback system so that system oscillate at 2 rad/sec. [10]

$GH = \frac{K(S+1)}{S^3+AS^2+2S+1}$

4 A Draw the Root Locus and comment on system stability. $G(s)H(s) = \frac{K}{S(S+4)(S^2+4S+20)}$. [10]

b For the system having the open loop transfer function draw the bode plot and determine the stability [10]

$$G(S)H(S) = \frac{50(S+3)}{S(S+1)(S+25)}$$

5 a Analyze the construction and working characteristics of Linear variable differential transducer (LVDT) [10]

b Compare the working of thermocouple and thermistor temperature transducers. [10]

6 Write Short notes (Any Two) [20]

a Mod Bus [10]

b SCADA [10]

c Landline telemetry and radio telemetry [10]

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