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Explain the inot spots of biodiversity in India.

IV.			effects and control measures	of water	pollution.
	(a)	Describe the cause,			

OR

- b) Explain the role of individual in disaster management.
- V. a) "Earth is over populated". Do you agree with the statement? Justify.

PTZKEIZKE ECKCSKTKAEL BOT I EMMERKENTA b) Explain the role of Information Technology in environment and human health. 15

to a) List the natural resources on which human beings are depending upon.

b) Write down the ecope and impagance of environmental studies.

f) What is the role of voluntary agencies in rehabilitation programme ?

b) Describe modern agriculture developments and changes caused by this.

e) White short notes on Forest Conservation Act in India.

II. a) Explain the use, over use and misuse of energy resource.

III. a) Explain the situations and function of a desert Ecosystem.

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Name : ......

VI Semester B.Tech. Degree (Regular/Supplementary/Improvement – Including Part Time) Examination, May 2014

(2007 Admn. Onwards)

PT2K6/2K6 EC/AEI 602 : CONTROL SYSTEMS

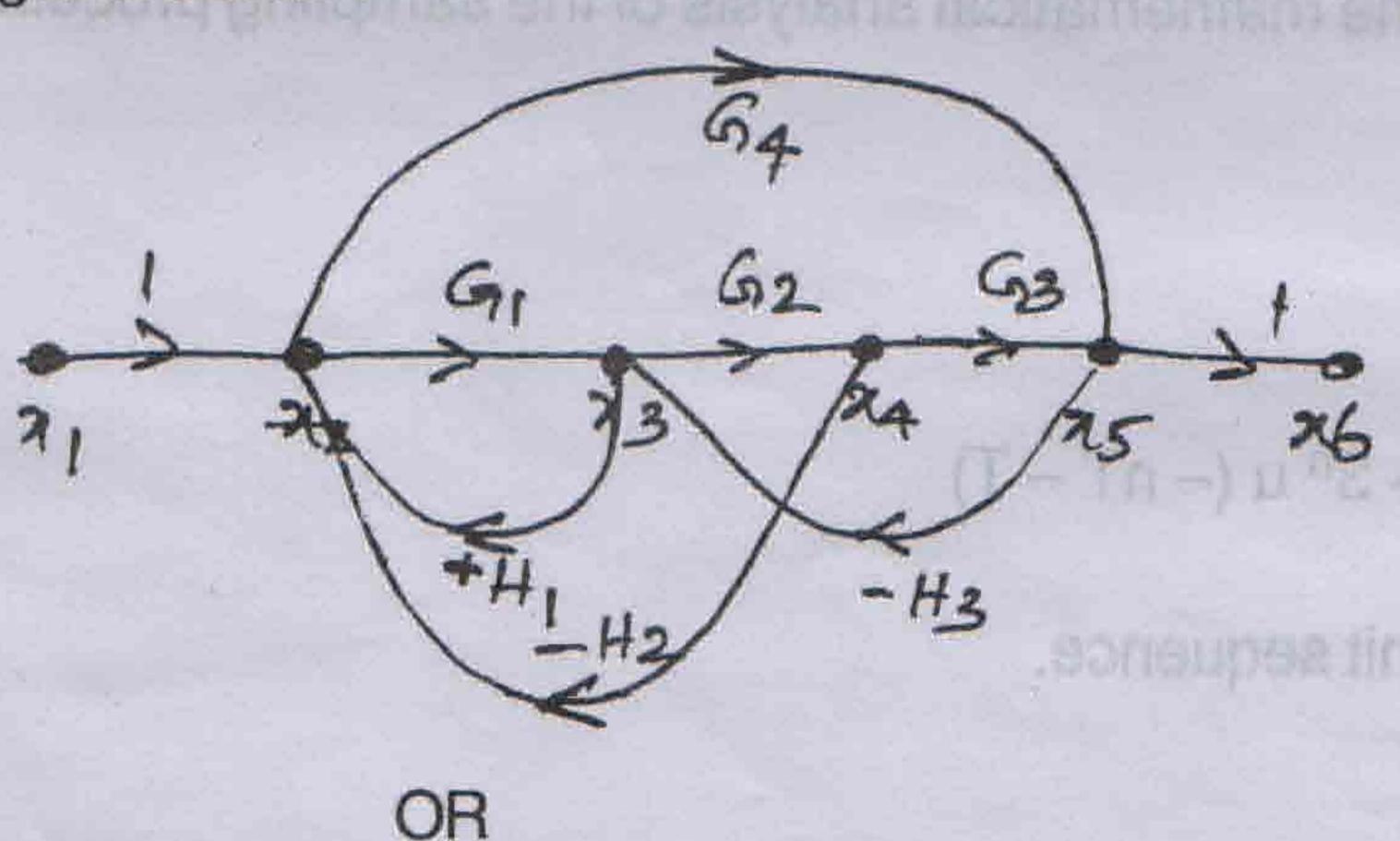
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Time: 3 Hours Max. Marks: 100

Instructions: Answer all questions.

Assume the missing data suitably, if any.

- 1. a) What are the assumptions made for the derivation of Laplace transform?
  - b) State any two properties of a signal flow graph.
  - c) Explain relative stability of a system.
  - d) Explain how gain and phase margin are measured from Bode plot.
  - e) Explain about sample data control systems.
  - f) What is bilinear transformation?
  - g) Explain what is state and state variable representation.
  - h) Compare the representation of a system in state space and transfer function. (8×5=40)
- 2. a) Find the transfer function  $x_5/x_1$  for the system whose signal flow graph is given below:



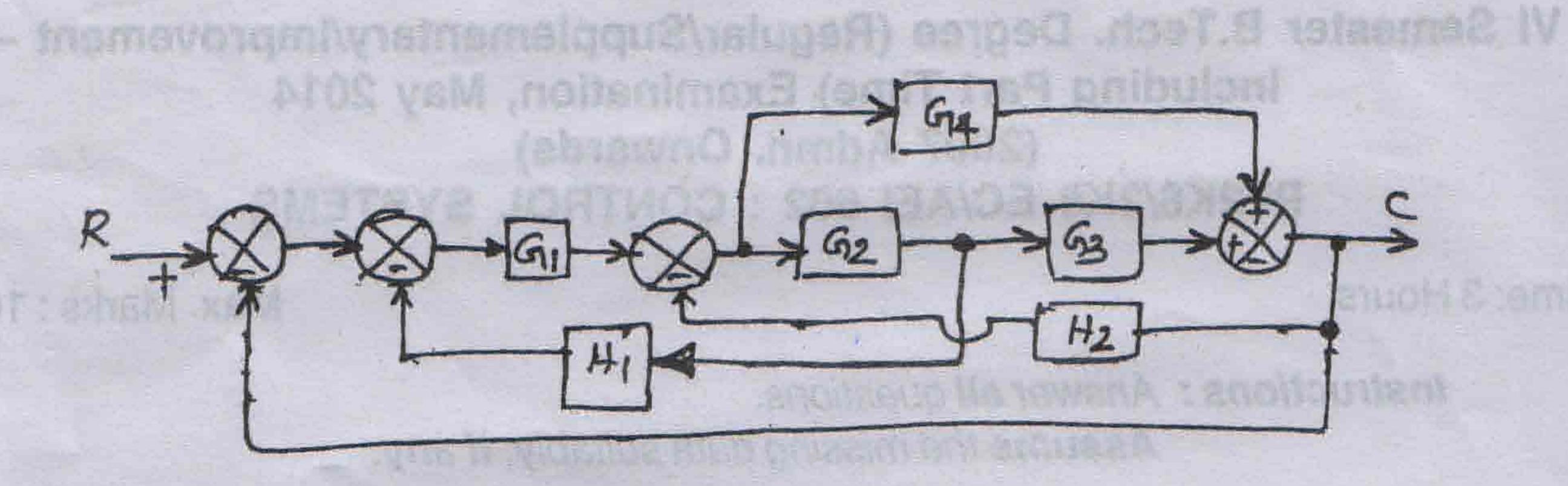
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b) Obtain the transfer function of the feedback control system by block diagram reduction technique.



3. a) Sketch the root locus of the open loop transfer function:

$$G(s) H(s) = \frac{K}{s(s+2)(s^2+2s+5)}.$$

$$M(s) = \frac{K}{s(s+2)(s^2+2s+5)}.$$

b) A unity feedback system has a plant transfer function of

G(s) H(s) = 
$$\frac{K(s+4)}{(s-1)(s-2)}$$

- 1) For K = 8, draw the Bode plots and find there from the PM and GM.
- 2) What should be the value of K for a phase margin of 30° and what is the corresponding gain margin?

  15
- 4. a) Explain in detail about the mathematical analysis of the sampling process.

  OR
  - b) Find the z-transform of

$$x (n T) = \left(\frac{1}{2}\right)^n u (n T) + 3^n u (-nT - T)$$

where u (nT) denotes unit sequence.



5. a) Obtain a state modes of the system described by the transfer function

$$\frac{y(s)}{u(s)} = \frac{5}{s^3 + 6s + 7}.$$
OR

b) Obtain the response y(t) of the following system.

$$\dot{\mathbf{x}} = \begin{bmatrix} -1 & -0.5 \\ 1 & 0 \end{bmatrix} \mathbf{x} + \begin{bmatrix} 0.25 \\ 0 \end{bmatrix} \mathbf{u}$$

$$X(0) = \begin{bmatrix} 1 \\ 0 \end{bmatrix}$$
 where u(t) is the unit step input occurring at t = 0.