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VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (E.E.E.) III Year I-Semester Supplementary Examinations, May/June-2017

Linear Control Systems

Time: 3 hours

Max. Marks: 70

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Differentiate between open loop and closed loop control systems with some example from daily life.
2. What are the similarities and differences between AC servomotor and 2 phase induction motor?
3. Transient response is determined only for a step input but steady state response is determined for all inputs. Explain the reason.
4. The block diagram of a unity feedback system is shown in figure1, determine the second undershoot time.

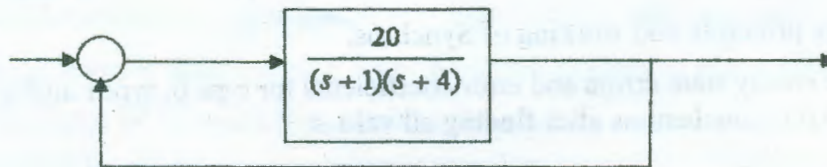
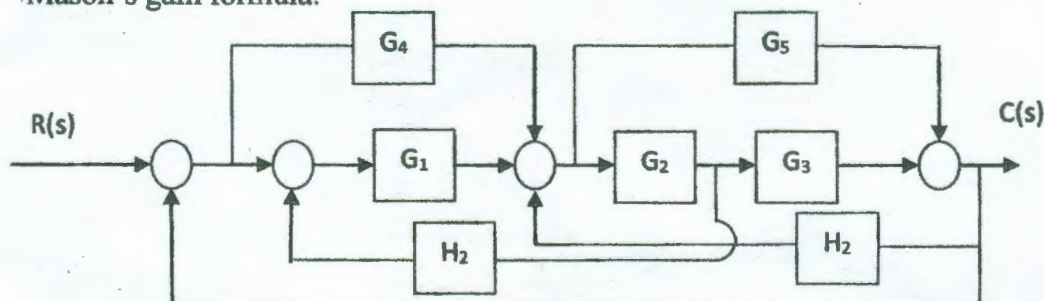


Figure 1

5. What is principle of argument?
6. Draw the polar plot for the following system:
 $G(s) = 2/(s+1)(s+2)$
7. Is it possible to represent a purely resistive circuit with state model? Explain the reason.
8. Define Observability.
9. Explain the relation between S-plane and Z-plane.
10. What is the difference between continuous system, discrete time system and digital system?

Part-B (5 × 10 = 50 Marks)

11. a) Derive the transfer function for armature controlled DC servo motor. [4]
- b) Determine the transfer function $C(s)/R(s)$ of the system shown in figure below by using Mason's gain formula. [6]



12. a) Explain the two special cases of Routh-Hurwitz stability criteria. [4]
- b) Draw the root locus of the unity feedback system whose open loop Transfer function is [6]

$$G(s) = \frac{K}{s(s+4)(s^2+8s+32)}$$

