

**24322**

**B. Tech 6th Semester (EE)  
Examination – May, 2018**

**CONTROL SYSTEMS ENGINEERING**

**Paper : EE-304-F**

*Time : Three Hours ]*

*[ Maximum Marks : 100*

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.*

**Note :** Question No. 1 is *compulsory* and attempt *one* question from each of *four* Section.

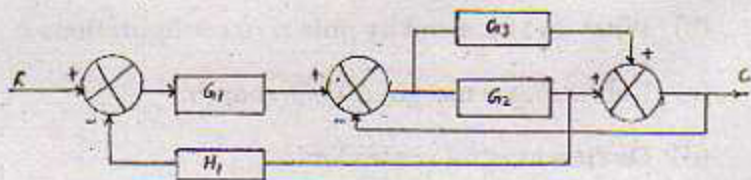
1. (a) Electric lift without liftman is an example of open loop system or closed loop system justify.
- (b) What do you mean by pole zero configurations ?
- (c) Define Phase margin & Gain margin.
- (d) Discuss integral controllers.
- (e) Define bode plot & its significance.

## SECTION - A

- Define open loop control system & closed loop control system by drawing their respective schematic block diagram. Also explain their advantages & disadvantages.
- (a) Discuss continuous time & sampled control system in detail.  
(b) Introductory remarks about non-linear control system.

## SECTION - B

- (a) Discuss relationship between transfer function & impulse response.  
(b) Explain state variable analysis with its design.
- Obtain overall transfer function using masons's gain formula.



### SECTION - C

6. (a) Define stability. Explain necessary & sufficient conditions of stability.
- (b) Time response of first order system w.r.t unit step function.
7. Sketch the root locus plot for the system when open loop transfer function is given by  $G(S)H(S) = K / S(S+4)(S^2 + 4S + 13)$ .

### SECTION - D

8. Draw the bode plot for the transfer function given below  $G(S)H(S) = 48(S+10) / S(S+20)(S^2 + 2.4s + 16)$ .
9. Write technical note on :
- (a) Stepper motor.
- (b) Compensator networks.
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