

30/4/2016

8E8102

Roll No. _____

[Total No. of Pages : 2]

8E8102

B.Tech. VIII - Semester (Main) Examination, April 2016
Electronic Instrumentation & Control Engineering
8EI2A Non-Linear Control Systems

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. Explain all non linearities in control system in detail (16)

OR

1. Differentiate the linear control system with non - linear control system behaviour in detail (16)

Unit - II

2. Explain:
- a) Method of isoclines (8)
 - b) Jump response (8)

OR

2. Explain:
- a) Limit cycles (8)
 - b) Poincare-Bendixson theorem (8)

Unit - III

3. Derive the describing function for the following non linearity (8×2=16)
- a) Threshold
 - b) Saturation

OR

3. How can you determine the stability of the non-linear control system? Explain it with the suitable example (16)

Unit - IV

4. Explain (8)
- a) Linearization and local stability (8)
 - b) Lyapunov's Direct Method (8)

OR

4. Explain (8)
- a) Equilibrium point theorem (8)
 - b) Krasoviskii's method (8)

Unit - V

5. What is the adaptive control? Explain all the components for constructing the adaptive control with a neat diagram (16)

OR

5. Explain: (8)
- a) Input-output linearization (8)
 - b) Gain scheduling (8)
-