

**M. TECH.-III (ELECTRICAL -POWER SYSTEM) (CBCS – 2015
COURSE) : WINTER - 2017
SUBJECT: ELECTIVE – II: ADVANCED CONTROL SYSTEM**

Day : **Thursday**
Date : **18/01/2018**

Time: **11.00 AM TO 02.00 PM**
Max. Marks: 60

W-2017-2949

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Assume suitable data if necessary.

SECTION – I

Q.1 Explain proportional only (P) control with figure and necessary equations. **[10]**

OR

Explain PID control and different tuning approaches in detail.

Q.2 Explain the following terms with reference to state variable analysis: **[10]**

- a) A system
- b) A state of a system
- c) The environment of a system

OR

Prove that $G(s) = C (SI - A)^{-1} B + D$.

Q.3 Write detailed note on non-linear systems and equilibrium points. **[10]**

OR

Write detailed note on describing function analysis.

SECTION – II

Q.4 What is Digital Control System? Explain in detail structure of Digital Control Systems. **[10]**

OR

Describe effects of sampling of continuous time signals. Give a brief note on sample and hold.

Q.5 Explain frequency response analysis of first order and second order systems. **[10]**

OR

Write detailed note on any one of the following:

- a) Polar plots
- b) Bode plots

Q.6 Write detailed note on parameter optimization. **[10]**

OR

What is optimal control? Write detailed note on Hamiltonian formulation of optimal control problem.

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