

M. Tech.-III (Electrical -Power System) (CBCS – 2015 Course) :

WINTER - 2018

SUBJECT: ELECTIVE – II a) ADVANCED CONTROL SYSTEM

Day: Thursday
Date: 06/12/2018

W-2018-3281

Time: 11.00 AM TO 02.00 PM
Max Marks. 60

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
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SECTION - I

Q.1 Explain in detail PID controller tuning for dynamic performance. **(10)**

OR

Describe the determining tuning constants for good control performance.

Q.2 Describe in detail conversion of transfer function to canonical variable model. **(10)**

OR

Write short notes on following with example:

- a) Eigen value
- b) Eigen vector

Q.3 State the concept of stability. Explain phase plane analysis with figure and suitable example. **(10)**

OR

State the concept of linearization. Explain feedback linearization and input output linearization.

SECTION - II

Q.4 Explain the effects of sampling of continuous time signals. Write brief note on Quantization. **(10)**

OR

Explain the following:

- a) Sample and hold
- b) Reconstruction of signal
- c) Sampling theorem

Q.5 Explain construction of Bode plot from Sweep frequency response analysis (SFRA) of transformer and its conclusion. **(10)**

OR

Describe exponential representation of Fourier series and Fourier transform of continuous time signals.

Q.6 Write short notes on : **(10)**

- a) Quadratic performance criterion
- b) Numerical solution of Matrix Riccati equation

OR

- a) Pontryagin's minimum principle
- b) Application to optimal control of discrete and continuous systems