SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Electronics & Communication)
Semester: III
Syllabus with Effect from: June - 2012

Paper Code: PS03CELC03	Total Credit: 4
Title Of Paper: Control System	

Unit	Description in detail	Weightage (%)
I	Open loop and closed loop control, Examples of control systems, Laplace transformation, Laplace transform theorems, Inverse Laplace transformation, Solution of linear differential equations using Laplace transformation.	20%
II	Linear and nonlinear systems, transfer functions for mechanical, electrical systems, Block diagram representation of control system, Block diagram reduction, potentiometers and synchros as error sensing devices, transfer function of armature control and field controls.	20%
III	Typical test signals, response of first order systems, transient response of second order system due to step input, time domain specification, impulse and ramp response of a second order system, Routh's stability criteria, steady state errors, static errors constants, error series and dynamic error coefficients.	20%
IV	Steady state response of a system due to sinusoidal input, Frequency response, Logarithmic plots or Bode Diagrams, Log magnitude v/s phase plots, Resonance peak and resonance frequency of a second order system, Polar plots, Nyquist stability criteria, stability analysis, Relative stability, Gain margin and Phase margin, closed loop frequency response, M circles and N circles, Nichol's chart.	20%

Basic Text & Reference Books:-

- Control system engineering: I.J. Nagarath and M. Gopal, Wiley Eastern Limited, 1992.
- Automatic Control Systems: B.C. Kuo, Prentice Hall India, 1990.
- Modern control engineering: K. Ogata, Prentice Hall India, 1990.
- Control system Analysis and Design: K.K. Agarwal, Khanna Publishers, 1994.