

# **AMP-12 CONTROL SYSTEMS**

## **UNIT-1 INTRODUCTION TO CONTROL SYSTEM**

- 1.1 Classification of Systems, Open-Loop Control System, Closed-Loop Control Systems,
- 1.2 Elements of Automatic or Feedback Control System,
- 1.3 Requirement of Automatic Control Systems

## **UNIT-2 MATHEMATICAL MODELS OF CONTROL SYSTEM**

- 1.1 Representation of a Control System, Description of Some Of Typical Physics System,
- 1.2 Tachnogenators, Potentiometers, LVDT and Synchros, Synchros, Hydraulic Actuation

## **UNIT-3 BASIC PRINCIPLES OF FEEDBACK CONTROL**

- 3.1 The Control Objectives, Feedback Control System Characteristics,
- 3.2 Proportional Mode of Feedback Control, Integral Mode Of Feedback Control,
- 3.3 Derivative Mode Of Feedback Control

## **UNIT-4 TIME DOMAIN ANALYSIS AND FREQUENCY RESPONSE**

- 4.1 Standard Test Signals, Static Accuracy, Computation of Steady State Errors,
- 4.2 Transient Response: First Order System,
- 4.3 Transient Response: Second Order System, Transient Response Specification,
- 4.4 Conclusion, Frequency Response,
- 4.5 Frequency Domain Specifications, Magnitude And Phase Angle Characteristics Plot,
- 4.6 Frequency Response Specification, Representation Sinusoidal Transfer Function

## **UNIT-5 CONCEPTS OF STABILITY AND THE ROUTH STABILITY CRITERION**

- 5.1 Bounded-Input Bounded-Output Stability,
- 5.2 Zero-Input Stability, the Routh Stability Criterion

## **UNIT-6 NYQUIST STABILITY CRITERION**

- 6.1 Stability Margin, Phase Margin

## **UNIT-7 BODE PLOTS & ROOT LOCUS**

- 7.1 The transfer function of a second order control system,
- 7.2 General Rules

## **REFERENCE BOOKS:**

1. Automatic Control Systems Book by Benjamin Kuo
2. Control Systems Engineering Book by I.J. Nagrath and M. Gopal