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|  **LESSON PLAN** |
| **Semester: 6TH Branch: ETC&TC ENGG. Subject:-CONTROL SYSTEM ENGG.** |
| MONTH | NOs ofPeriods as Per Syllabus | NOs ofPeriodsActually available |  TOPICS TO BE COVERED |
| APRILMAY | 05080508 | 1010 | 1. **Fundamental of Control System**

1.1 Classification of Control system1.2 Open loop system & Closed loop system and its comparison1.3 Effects of Feed back1.4 Standard test Signals(Step, Ramp, Parabolic, Impulse Functions)1.5 Servomechanism1.6 Regulators ( Regulating systems)**2. TRANSFER FUNCTIONS**2.1 Transfer Function of a system & Impulse response,2.2 Properties,Advantages& Disadvantages of Transfer Function2.3 Poles & Zeroes of transfer Function2.4 Representation of poles & Zero on the s-plane2.5 Simple problems of transfer function of network1. **Control system Components & mathematical modelling of physical System**

3.1Components of Control System3.2Potentiometer, Synchros, Diode modulator & demodulator ,3.3DC motors, AC Servomotors3.4 Modelling of Electrical Systems(R, L, C, Analogous systems)1. **Block Diagram & Signal Flow Graphs(SFG)**

4.1 Definition of Basic Elements of a Block Diagram4.2 Canonical Form of Closed loop Systems4.3 Rules for Block diagram Reduction4.4 Procedure for of Reduction of Block Diagram4.5 Simple Problem for equivalent transfer function4.6 Basic Definition in SFG & properties4.7 Mason’s Gain formula4.8 Steps foe solving Signal flow Graph4.9 Simple problems in Signal flow graph for network |

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| JUNEJULY | 0806080705 | 1015 | 1. **Time Domain Analysis of Control Systems**

5.1 Definition of Time, Stability, steady-state response, accuracy, transient accuracy, In-sensitivity and robustness.5.2 System Time Response5.3 Analysis of Steady State Error5.4 Types of Input & Steady state Error(Step ,Ramp, Parabolic)5.5 Parameters of first order system & second-order systems5.6 Derivation of time response Specification (Delay time, Rise time, Peak time,Setting time,Peak over shoot)1. **FeedbackCharacteristics of Control Systems**

6.1 Effect of parameter variation in Open loop System & Closed loop Systems6.2 Introduction to Basic control Action& Basic modes of feedback control:proportional, integral and derivative6.3 Effect of feedback on overall gain, Stability**6.4** Realisation of Controllers( P, PI,PD,PID) with OPAMP1. **Stability concept& Root locus Method**

7.1 Effect of location of poles on stability7.2 RouthHurwitz stability criterion.7.3 Steps for Root locus method**7.4** Root locus method of design(Simple problem)1. **Frequency-response analysis**&**Bode Plot**

8.1 Frequencyresponse,Relationship between time & frequency response8.2 Methods of Frequency response8.3 Polar plots & steps for polar plot8.4 Bodes plot & steps for Bode plots8.5 Stability in frequency domain, Gain Margin& Phase margin8.6 Nyquist plots. Nyquiststability criterion.8.7 Simple problems as above1. **State variable Analysis**-

9.1 Concepts of state, state variable, state model,9.2 state modelsfor linear continuous time functions(Simple) |
|  | 60 | 45 |  |