10 ME 32C MECHATRONICS

III B.Tech II Semester

(with effect from the academic year 2012-2013)

Credits: 4

Lectures/week: 4 Hrs. *Sessional Marks: 40*

University Exam:3 Hrs *End Examination Marks: 60*

UNIT-I

Introduction: Introduction to Mechatronics, Scope of Mechatronics, Electronics for Mechanical Engineer, Mechanical systems for Electronic Engineer.

UNIT-II

Sensors: Introduction, Position and Speed measurement.

Actuators: Solenoids and relays, electric motors, D. C. Motors, Stepper motors, Selecting a Motor, Mechanical, Hydraulic and Pneumatic actuators, brief treatment.

UNIT-III

Brief Introduction to Control Systems: Control Systems – Closed loop and open loop control system. Feed back characteristics; Fundamentals of Analog and Digital Control Systems - block diagrams; Block diagrams of discrete time (Sampled data digital) components. Control Systems and Computer Controlled Systems, Servo Mechanics.

UNIT-IV

PLC (Programmable Logic Controllers): Introduction, PLC programming, Mnemonics, Timers, Internal relay, counters, specifications and selection of PLC.

UNIT-V

Design of Mechatronics Systems: Introduction, automatic front and back end cutting in steel rolling mill, lift control system, CNC lathe, Temperature control of a heat treatment furnace, electrode arm control in electric arc furnace.

TEXT BOOKS:

1. Mechatronics : Shanmugham N.
2. Mechatronics : HMT Publications

REFERENCES:

1. Introduction to Mechatronics & Measurement System : Michail B.Histand David G Alciatore
2. Feed Back Control System : Schaum Outline3