
EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs.	100
Practical Exam	–	–
Oral Exam	–	25
Term Work	–	25

SYLLABUS

1. Mechatronics definition, scope, various engineering philosophies forming the mechatronics roles played by mechanics and electronics in modern technological fields.
2. Architecture & addressing modes of 8086/8088 microprocessor, its instructions set, programming for 8086/8088 with assembly language and its use other than as a computer.
3. Interfacing hardware with real world, analog interface and data acquisition, digital i/o interfacing, special function interfacing signal conditioning, special utility support hardware.
4. Signal processing and data processing: Provincials of analogue signal conditioning, signal level changes, linearization, conversion, filtering and impedance matching passive circuits' instrumentation amplifier using pampas specifications and circuits in instrumentation, digital signal conditioning, and converters compactors DAC/ADC data acquisition system.
5. PLC: introduction to the design and mode of operation of programmable logic control (PLC) conversion and documentation of control into runnable PLC programme.
6. Mechanical elements of roots robot co-coordinating system, robot drive, mechanism lead screws chain and linkage belt drives, gear drives, harmonic drives, cyclo speed reducers, end effectors, gripper techniques, gripper drives, systems hydraulics drives, pneumatic drives, electric motor drives.

Robot arm kinematics : Kinematics, rotation matrix, composite representation, homogeneous coordinate and transformation matrix, Danvit Hartenberg representation.

Robot programming languages : various robot programming languages, characteristics of robot level language, characteristics of task level programming.

Concepts of computerized numerical control machines tools : open loop servo systems, design consideration of spindle drives and machines slide motions, stepper motors, servo motors, ball screws linear bearings, closed loop servo systems, feed back systems linear and rotary transducers, automatic tool changing devices.

References Books:

1. 8086/8088 Microprocessor Programming (*Lieu Fibson*)
2. 8086/8088 Microprocessor Programming (*Triebel & Singh*)
3. OPAMP and linear Integrated Circuits (*Coughlin & Driscoll*)
4. Process control & Instrumentation technology (*Cirtis D Johnson*)
5. Robotics (*K S Fu, R C Gonzalez, S C Lee Johnson*)
6. Robotics : An introduction (*D Maclogy - D. M. J. Harris*)
7. Industrial control & instrumentation (*W Bolaton*) Orient Longman

