

MECHATRONICS & MICROPROCESSOR

Written by Administrator
Sunday, 01 November 2009 10:59 -

Subject Code

:

06ME64

IA Marks

:

25

No. of Lecture Hrs./ Week

:

04

Exam Hours

MECHATRONICS & MICROPROCESSOR

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:

03

Total No. of Lecture Hrs.

:

52

Exam Marks

:

100

PART - A

Unit - 1

Introduction to Mechatronic systems: Measurement and control systems Their elements and functions, Microprocessor based controllers.

6 Hours

Unit - 2

Review of Transducers and Sensors: Definition and classification of transducers. Definition and classification of sensors. Principle of working and applications of light sensors, proximity sensors and Hall effect sensors.

7 Hours

Unit 3

Electrical actuation systems: Electrical systems, Mechanical switches, solid-state switches, solenoids, DC & AC motors, Stepper motors and their merits and demerits.

6 Hours

Unit - 4

Signal Conditioning: Introduction to signal conditioning. The operational amplifier, Protection, Filtering, Wheatstone bridge, Digital signals Multiplexers, Data acquisition, Introduction to

Digital system processing Pulse-modulation.

7 Hours

PART - B

Unit - 5

Introduction to Microprocessors: Evolution of Microprocessor, Organization of Microprocessors (Preliminary concepts), basic concepts of programming of microprocessors.

Review of concepts – Boolean algebra, Logic Gates and Gate Networks, Binary & Decimal number systems, memory representation of positive and negative integers, maximum and minimum integers. Conversion of real numbers, floating point notation, representation of floating point numbers, accuracy and range in floating point representation, overflow and underflow, addition of floating point numbers, character representation.

7 Hours

Unit - 6

Logic function: Data word representation. Basic elements of control systems 8085A processor architecture terminology such as CPU, memory and address, ALU, assembler data registers, Fetch cycle, write cycle, state, bus, interrupts. Micro Controllers. Dif
ference between microprocessor

and micro controllers. Requirements for control and their implementation in microcontrollers. Classification of micro controllers.

7 Hours

Unit - 7

Organization & programming of Microprocessors: Introduction to organization of INTEL 8085-Data and Address buses, Instruction set of 8085, programming the 8085, assembly language programming.

6 Hours

Unit - 8

Central processing unit of Microprocessors: Introduction, timing and control unit basic concepts, Instruction and data flow, system timing, examples of INTEL 8085 and INTEL 4004 register organization.

6 Hours

Text Books:

1. **Mechatronics** – W.Bolton, Longman, 2Ed, Pearson Publications, 2007.
2. **Microprocessor Architecture, Programming And Applications With 8085/8085A**

– R.S. Ganokar, Wiley Eastern.

Reference Books:

1. **Mechatronics** – Principles, Concepts and applications – Nitaigour and Premchand Mahalik – Tata McGraw Hill – 2003.
2. **Mechatronics Principles & applications** by Godfrey C. Onwubolu, Elsevier.
3. **Introduction Mechatronics & Measurement systems**, David.G. Aliciatore & Michael.B.Bihistaned, Tata McGraw Hill, 2000.
4. **Intel Microprocessor**; Barry B Bray, Pearson edition