

INTRODUCTION TO ROBOTICS

- Present and future scope of robotics
- Types of robots
- Application of robotics

BASIC ELECTRONICS

- Resistors
- Capacitors
- Diodes
- Transistor

TYPES OF MOTORS

- Introduction to Motors
- AC motor
- DC motor
- Stepper motor
- Servo motor
- DC geared motor

TYPES OF SENSORS

- Introduction to Sensing Devices
- IR sensor
- Light searching sensor
- Temperature sensor
- Touch sensor
- Motion sensor

MOTOR CONTROLLING CIRCUITS

- Motor controlling using driver ICs IC's
- LM358(dual op- amp)
- LM35(Temperature sensor)
- L293D(dual H-bridge IC)
- 7805(Voltage regulator)

INTRODUCTION TO EMBEDDED SYSTEM

- History & need of Embedded System
- Basic components of Embedded System
- Hardware Classification of Embedded System
- Programming Language Classification of Embedded System
- Advantage & Disadvantage of Low level & High level programming language of Embedded System

CLASSIFICATION OF MICROPROCESSOR & MICROCONTROLLER

- Difference between Microprocessor & Microcontroller
- Classification based on architecture
- Classification based on Instruction Set
- Type of Microcontroller
- Memory Classification

PIN DESCRIPTION & ARCHITECTURE OF AVR MICROCONTROLLER

MEMORY ARCHITECTURE OF ATMEGA16

BRIEF INTRODUCTION TO COMPUTER ARCHITECTURE

- Classification of Von-Neumann and Harvard Architecture
- Difference between RISC and CISC
- Memory Classification (Primary & Secondary)

COMPUTER LANGUAGES

- Low Level Languages
- Middle Level Language
- High Level Language
- Interaction of language with Compilers

EMBEDDED DEVELOPMENT TOOLS

- Assembler
- Interpreter
- Compiler
- Simulator

INTRODUCTION OF EMBEDDED C

- Why C
- Benefits of C over Assembly
- Constants, Variables & Data Types
 - Keywords & Identifiers
 - Data type & its memory representation
 - User Defined Data type (structure)
 - Array
 - Pointers
- Operators
 - Arithmetical Operator
 - Logical Operator
 - Bitwise Operators
- Control Statement and Loops
 - If
 - Switch
 - For
 - While
 - Do While
- Introduction to Preprocessor Directives
- Assembly within C (Inline Assembly)

LED INTERFACING

SEVEN SEGMENT INTERFACING

- Non-Multiplex
- Multiplex

LCD INTERFACING

- To move data on LCD in 8-bit
- To move data on LCD in 4-bit
- To display data on both rows in 4 and 8-bit Mode
- Scrolling message display on LCD in 4 and 8 bits Mode.

SWITCH & KEYPAD INTERFACING

- Introduction to Switches & Keyboard Matrix
- Interfacing Circuit of Switches & Keyboard Matrix
- Programming of Keyboard Matrix & Switches
- Controlling of LED's by using Switches
- Key board Matrix & LCD Interfacing Program

TIMER

- Timer0/Timer1/Timer2 Programming
- PWM using Timers

INTERRUPT

- Timer Interrupts Programming
- External Hardware Interrupts Programming
- Interrupt Priority

RS232 INTERFACING

- Interfacing with PC using UART/RS232
- Interfacing with PC using UART/RS232 with Interrupts

ADC INTERFACING

- To display digital data on LED
- To display digital data on LCD

SENSOR INTERFACING

- IR Sensor Interfacing
- Temperature Sensor Interfacing

OTHER COMMUNICATION PROTOCOLS

- I2C protocol
- SPI Protocol

