

# CETPA INFOTECH PVT. LTD.

## CURRICULUM FOR EMBEDDED SYSTEM DESIGN

### (8051 MICROCONTROLLERS USING ASSEMBLY & C)

<p><b>INTRODUCTION TO EMBEDDED SYSTEM</b></p> <ul style="list-style-type: none"> <li>• History &amp; need of Embedded System</li> <li>• Basic components of Embedded System</li> <li>• Hardware Classification of Embedded System</li> <li>• Programming Language Classification of Embedded System</li> <li>• Advantage &amp; Disadvantage of Low level &amp; High level programming language of Embedded System</li> </ul> <p><b>CLASSIFICATION OF MICROPROCESSOR &amp; MICROCONTROLLER</b></p> <ul style="list-style-type: none"> <li>• Difference between Microprocessor &amp; Microcontroller</li> <li>• Classification based on architecture</li> <li>• Classification based on Instruction Set</li> <li>• Type of Microcontroller</li> <li>• Memory Classification</li> </ul> <p><b>INTRODUCTION TO 8051 MICROCONTROLLER</b></p> <ul style="list-style-type: none"> <li>• Introduction of ATMEL 8051 family</li> <li>• Block diagram description of AT89C51</li> <li>• Special feature of AT89C51</li> <li>• Pin Description of AT89C51</li> </ul> <p><b>REGISTERS &amp; MEMORY OF AT89C51</b></p> <ul style="list-style-type: none"> <li>• Description of RAM</li> <li>• Description of CPU Registers</li> <li>• Functions of SFR</li> </ul> <p><b>ASSEMBLY LANGUAGE PROGRAMMING OF AT89C51</b></p> <ul style="list-style-type: none"> <li>• Addressing modes of AT89C51</li> <li>• Directives of Assembly Language</li> <li>• Data Transfer Instruction</li> <li>• Jump Instruction</li> <li>• Arithmetic Instruction</li> <li>• Logical Instruction</li> <li>• Branching Instruction</li> </ul> <p><b>INTERFACING OF LED</b></p> <ul style="list-style-type: none"> <li>• Introduction of LED's</li> <li>• Interfacing Circuit Description of LED's</li> <li>• Programming of LED's Interfacing</li> </ul>	<p><b>INTERFACING OF SEVEN SEGMENT DISPLAY</b></p> <ul style="list-style-type: none"> <li>• Introduction to 7 Segment Display</li> <li>• Types of 7 Segment Display</li> <li>• Interfacing Circuit Description of 7 Segment Display</li> <li>• Programming of 7 Segment Display Interfacing</li> </ul> <p><b>INTERFACING OF LCD</b></p> <ul style="list-style-type: none"> <li>• Introduction to 16 x 2 LCD</li> <li>• Commands of 16 x 2 LCD</li> <li>• Interfacing Circuit Description of 16 x 2 LCD</li> <li>• Programming of 16 x 2 LCD</li> </ul> <p><b>INTERFACING OF SWITCHES &amp; KEYBOARD MATRIX</b></p> <ul style="list-style-type: none"> <li>• Introduction to Switches &amp; Keyboard Matrix</li> <li>• Interfacing Circuit of Switches &amp; Keyboard Matrix</li> <li>• Programming of Keyboard Matrix &amp; Switches</li> <li>• Controlling of LED's by using Switches</li> <li>• Key board Matrix &amp; LCD Interfacing Program</li> </ul> <p><b>INTERFACING OF MOTORS</b></p> <ul style="list-style-type: none"> <li>• Introduction to Motors</li> <li>• Types of Motors used in Embedded System</li> <li>• Programming &amp; Controlling of motors in Embedded System</li> </ul> <p><b>TIMERS &amp; COUNTER PROGRAMMING</b></p> <ul style="list-style-type: none"> <li>• Introduction to Timer &amp; Counter</li> <li>• Difference between Timer and Counter</li> <li>• Description of SFR associated with Timer &amp; Counter</li> <li>• Programming of Timer &amp; Counter</li> </ul> <p><b>SERIAL COMMUNICATION PROGRAMMING</b></p> <ul style="list-style-type: none"> <li>• Introduction to Serial Communication</li> <li>• Types of Serial Communication</li> <li>• Description of SFR associated with Serial Communication</li> <li>• Introduction &amp; Interfacing of UART</li> <li>• Programming of UART</li> </ul>	<p><b>INTERRUPT DRIVEN PROGRAMMING</b></p> <ul style="list-style-type: none"> <li>• Introduction to Interrupts</li> <li>• Types of Interrupts</li> <li>• Programming of Software &amp; Hardware Interrupts</li> </ul> <p><b>INTERFACING OF ADC</b></p> <ul style="list-style-type: none"> <li>• Introduction to ADC</li> <li>• Interfacing Circuit of ADC</li> <li>• Working &amp; Interfacing of Temperature Sensor (DS1621 &amp; LM35)</li> </ul> <p><b>INTERFACING OF EXTERNAL MEMORY</b></p> <ul style="list-style-type: none"> <li>• Introduction to External Memory Interfacing</li> <li>• Introduction to I2C Protocol</li> <li>• Using I2C library to read/write External Memory</li> </ul> <p><b>INTRODUCTION OF EMBEDDED C</b></p> <ul style="list-style-type: none"> <li>• Introduction to Embedded C</li> <li>• Different between C &amp; Embedded C</li> <li>• Data Type of Embedded C</li> <li>• Operators of Embedded C</li> <li>• Statements &amp; Loops of Embedded C</li> </ul> <p><b>INTERWORKING OF ASSEMBLY &amp; EMBEDDED C</b></p> <ul style="list-style-type: none"> <li>• Inline Function</li> <li>• Inline Assembly Routines</li> </ul> <p><b>PROGRAMMING &amp; INTERFACING USING EMBEDDED C</b></p> <ul style="list-style-type: none"> <li>• Programming of Timer &amp; Counter</li> <li>• Programming of Serial Port</li> <li>• Programming of Interrupt</li> <li>• LCD Interfacing</li> <li>• Motor Interfacing</li> <li>• Key board Matrix Interfacing</li> </ul>
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