

Shantilal Shah Engineering College – Bhavnagar
Department of Instrumentation & Control Engineering
 GTU PAT Examination Syllabus – WINTER (ODD) 2019

Semester: - 5th

Subject Name: - Microcontroller & Interfacing (2151707)

Unit No.	Topic
1	<p>Introduction to 8085 Micro processor Basic ideas about:- Micro processor definition, Machine language, Assembly language, Lower level languages, Higher level languages, Interpreter, Compiler, Example and basic block diagram of computer with the micro processor as CPU(ALU+CU).</p>
2	<p>8085 Microprocessor Architecture and Memory interfacing Microprocessor Bus organization:- The 8085 Bus structure block diagram, Explanation of Address bus, Data bus, Control bus, RD, WR, MEM,I/O signals. Memory:- Definition of memory, Explanation about Program memory (code memory/ ROM), Read/write memory (RAM). Latches as a storage element: Diagram of four latches as a 4-bit register, Explanation how 4 nit register store data using RD, WR and enable signal. Diagram of 4X8 Bit register, How address and command signal is given to 4X8 bit register memory Memory and Instruction Fetch:- Instruction fetch Diagram, Explain Program Counter register, Stack Pointer, Register array bank, Control Unit, ALU. Explanation of steps to perform instruction fetching operation from memory to Microprocessor, working of control signal, data bus, address bus, internal data bus, instruction decoder and ALU. Introduction to Microcomputer system block diagram</p>
3	<p>Microprocessor Memory interfacing and Timing Cycles 8085 Microprocessor Pin out and signal diagram Higher address bus, Lower address and data bus, ALE, RD, WR, IO/M, VCC, VSS, X1,X2 pins, Clock frequency of 8085 De-multiplexing of the Address and data Bus AD7 - AD0, Role of ALE. Generation of control signals MEMR, MEMW, IORD, and IOWR. Timing cycles:- Definition of T-state, Machine cycle, Instruction cycle Timing cycle to transfer of byte(ex. mov C,A) from memory to MPU, Role of ALE, Role of IO/M , RD and WR. Timing Cycle of any two byte data transfer instruction(Ex. MVI A, 32H) Memory Interfacing with 8085:- Basic concept of Memory interfacing, concept of Chip select pin, Address decoding techniques (Ex. Using NAND gate, Decoder etc.), Memory address selection according to size of memory chip,. Example of interfacing different size of ROM, EPROM with 8085 Microprocessor. Example of interfacing different size of RAM with 8085 Microprocessor.</p>
4	<p>Introduction & architecture of 8051 Micro controller Definition of Micro controller, Difference between Microprocessor and Microcontroller, Block diagram of 8051 Microcontroller, over view of 8051 family</p>

	<p>8051 Microcontroller Architecture Architecture of 8051 Microcontroller, The program counter and ROM space in the 8051, 8051 flag bits and the PSW register, 8051 register banks, stack and RAM Space.</p>
5	<p>8051 Assembly Language Programming: Introduction to 8051 assembly programming, Structure of Assembly language, Assembling and running an 8051 program.</p>
6	<p>8051 Addressing Modes: Immediate and register addressing modes, Accessing memory using various Addressing modes, Bit addresses for I/O and RAM.</p>
7	<p>Arithmetic and Logic Instructions and Programs: Arithmetic instructions, Signed number concepts and arithmetic operations, Logic and compare instructions, Rotate instruction and data serialization, BCD, ASCII, and other application programs.</p>