

SIDDARTHA INSTITUTE OF SCIENCE AND TECHNOLOGY:: PUTTUR**(AUTONOMOUS)**

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QUESTION BANK (DESCRIPTIVE)**Subject with Code:** MICROPROCESSORS AND MICROCONTROLLERS (23EC0457)**Course & Branch:** B.Tech.–CIA**Regulation:** R23**Year & Sem:** II-B.Tech.& II-Sem.**UNIT-I****INTRODUCTION,8086 ARCHITECTURE**

1.	a)	Define microprocessor.	[L1][CO1]	[2M]
	b)	What is the size of address bus and data bus in 8086.	[L2][CO1]	[2M]
	c)	Define Instruction Queue.	[L1][CO1]	[2M]
	d)	List different types of Interrupts.	[L1][CO1]	[2M]
	e)	What is pipelining.	[L2][CO1]	[2M]
2.	a)	Explain the basic microprocessor architecture.	[L2][CO1]	[4M]
	b)	Explain Harvard and Von Neumann architectures with examples	[L2][CO1]	[6M]
3.	a)	Difference between Microprocessor and Microcontroller.	[L2][CO1]	[5M]
	b)	Comparisons between CISC and RISC architectures.	[L2][CO1]	[5M]
4.	a)	Write the features of 8086 microprocessor.	[L1][CO1]	[4M]
	b)	Explain the functions of a program counter, stack pointer & ALU in 8086 μ P.	[L2][CO1]	[6M]
5.		Draw the pin diagram of the 8086 microprocessor and categorize the pins based on function.	[L3][CO1]	[10M]
6.	a)	Give the evolution of 8086 microprocessor family.	[L2][CO1]	[5M]
	b)	Draw the flag register of the 8086 microprocessor and explain each bit in detail.	[L3][CO1]	[5M]
7.		Explain the internal architecture of the 8086 with a neat functional block diagram.	[L2][CO1]	[10M]
8.	a)	Mention the importance for memory segmentation.	[L2][CO1]	[5M]
	b)	State the importance of segment registers.	[L2][CO1]	[5M]
9.	a)	Define an interrupt and explain the different types of interrupts in the 8086 microprocessors.	[L2][CO1]	[7M]
	b)	Explain the interrupt response in 8086.	[L2][CO1]	[3M]
10.	a)	Explain different general-purpose registers of 8086 and their functions.	[L2][CO1]	[5M]
	b)	Draw the timing diagrams of memory read and memory write cycles.	[L3][CO1]	[5M]
11.	a)	Draw and explain the maximum mode configuration of 8086.	[L3][CO1]	[5M]
	b)	Draw and explain the minimum mode configuration of 8086.	[L3][CO1]	[5M]

UNIT –II
8086 PROGRAMMING

1.	a)	Explain Instruction format of 8086.	[L2][CO2]	[2M]
	b)	Define op-code and operand.	[L1][CO2]	[2M]
	c)	Define addressing mode.	[L1][CO2]	[2M]
	d)	State the function of Editor.	[L1][CO2]	[2M]
	e)	Describe assembler directives.	[L1][CO2]	[2M]
2.	a)	Explain Program development steps.	[L2][CO3]	[5M]
	b)	List out the instruction sets, Explain the instruction sets with examples.	[L4][CO2]	[5M]
3.	a)	Explain the Data transfer instructions of the 8086 microprocessor with example.	[L2][CO2]	[5M]
	b)	Describe the Logical instructions of the 8086 microprocessor with example.	[L2][CO2]	[5M]
4.	a)	Explain the Arithmetic instructions of the 8086 microprocessor with example.	[L2][CO2]	[5M]
	b)	Explain the String manipulation instructions of the 8086 microprocessor with example.	[L2][CO3]	[5M]
5.	a)	Discuss un conditional branch instructions with an example.	[L2][CO3]	[5M]
	b)	Discuss conditional branch instructions with an example.	[L2][CO3]	[5M]
6.	a)	Explain CALL, RETURN instructions.	[L2][CO2]	[5M]
	b)	Mention an example for the 8086 instructions: AAA, CWD, JNBE, LAHF, MOV, RCL, ROL.	[L1][CO2]	[5M]
7.	a)	Define addressing mode. Describe in detail about each addressing mode with an example.	[L2][CO2]	[5M]
	b)	What is an assembler directive and explain any 5 assembler directive with an example.	[L2][CO2]	[5M]
8.	a)	Write an assembly language program to add two 8-bit numbers.	[L3][CO2]	[5M]
	b)	Write an assembly language program to subtract two 8-bit numbers.	[L3][CO2]	[5M]
9.	a)	Write an assembly language program to perform conversion from binary to gray on 4-bit data.	[L3][CO2]	[5M]
	b)	Write simple assembly language program to find the smallest of the given series of numbers.	[L3][CO2]	[5M]
10.	a)	Write simple assembly language program to find the biggest of the given series of numbers.	[L3][CO2]	[5M]
	b)	Write an ALP to addition of series of 'n' numbers.	[L3][CO2]	[5M]
11.	a)	Describe the use of various assembly language development tools like editor, assembler, linker, locator and debugger.	[L2][CO3]	[8M]
	b)	Define DAA instruction in 8086.	[L1][CO2]	[2M]

UNIT –III
8086 INTERFACING

1	a)	Define interfacing.	[L1] [CO3]	2M
	b)	What is USART.	[L1] [CO3]	2M
	c)	What is key bouncing?	[L1] [CO3]	2M
	d)	Give one example of a non-volatile RAM and volatile RAM	[L1] [CO3]	2M
	e)	Define an interrupt.	[L1] [CO3]	2M
2	a)	Explain the Static memory interface with 8086 microprocessor.	[L2] [CO3]	[5M]
	b)	Interface two 4kx8 EPROM and two 4kx8 RAM chips with 8086. Select suitable maps.	[L3] [CO3]	[5M]
3	a)	What is the difference between static RAM and dynamic RAM?	[L2] [CO3]	[5M]
	b)	Design a memory interface of 16kx8 EPROM and 32kx8 RAM and mention the starting address of the memory.	[L3] [CO3]	[5M]
4	a)	Explain the architecture of the 8255 Programmable peripheral Interface.	[L2] [CO3]	[5M]
	b)	Describe how handshaking is implemented in Mode 1, of 8255.	[L2] [CO3]	[5M]
5		Explain in detail how LEDs interface with the 8086 microprocessor using the 8255 PPI.	[L2] [CO3]	[10M]
6	a)	Define Seven segment displays. Mention how Seven segment displays interface with 8086 microprocessor	[L2] [CO3]	[5M]
	b)	Discuss about software and hardware interrupt applications.	[L2] [CO3]	[5M]
7		Explain the architecture of the 8251 USART with a neat functional block diagram	[L2] [CO3]	[10M]
8		Describe the internal architecture of the 8237 DMA controller.	[L2] [CO3]	[10M]
9	a)	How to interface a stepper motor with the 8086 microprocessor explain in detail.	[L3] [CO4]	[5M]
	b)	Write ALP to rotate shaft of a 4-phase stepper motor. (i) in clockwise 5 rotations (ii) in anticlockwise 5 rotations	[L4] [CO3]	[5M]
10	a)	Draw and explain the block diagram for interfacing an A/D converter (like ADC0808/0809) with 8086.	[L3] [CO3]	[5M]
	b)	Explain how a D/A converter (like DAC0800 or AD558) is interfaced with 8086.	[L3] [CO4]	[5M]
11		Draw the block diagram of 8259 programmable Interrupt controller and explain its operations.	[L2] [CO4]	[10M]

UNIT- IV

INTEL 8051 MICROCONTROLLER

1.	a)	Define Microcontroller.	[L1][CO4]	[2M]
	b)	List various I/O ports of 8051.	[L1][CO4]	[2M]
	c)	State the use of NOP Instruction of 8051.	[L1][CO4]	[2M]
	d)	Define Immediate addressing mode.	[L1][CO4]	[2M]
	e)	What is CJNE Instruction.	[L1][CO4]	[2M]
2.	a)	Draw the internal architecture of 8051 microcontroller and explain the function of each.	[L2] [CO4]	[6M]
	b)	List the features of 8051 microcontroller.	[L1] [CO4]	[4M]
3.	a)	Describe the internal RAM structure in the 8051 microcontrollers.	[L2] [CO4]	[5M]
	b)	Explain the external memory in microcontroller.	[L2] [CO4]	[5M]
4.	a)	Analyze the functionality of I/O ports circuits in 8051 microcontrollers.	[L4] [CO4]	[5M]
	b)	Explain the timers and counters operation in 8051 microcontrollers.	[L2][CO4]	[5M]
5.	a)	Illustrate the operation of serial data input /output in 8051 μ C.	[L3][CO4]	[5M]
	b)	What is interrupt? Explain the different types of interrupts in the 8051 microcontroller.	[L2][CO4]	[5M]
6.	a)	Explain the data transfer instructions of 8051 microcontroller with an example.	[L2][CO4]	[5M]
	b)	Discuss the logical operations Instructions of 8051 microcontroller with an example	[L2][CO4]	[5M]
7.	a)	Explain arithmetic operations Instructions of 8051 microcontroller with an example.	[L2][CO4]	[5M]
	b)	Describe the different types of addressing mode supported by 8051 with suitable examples.	[L2][CO4]	[5M]
8.	a)	Develop and write an assembly program of 8051 microcontroller to unsigned addition and subtraction two 8-bit numbers and store the result in a 2055&2057 memory location.	[L3][CO4]	[5M]
	b)	Develop and write an assembly program of 8051 microcontroller to divide and multiplication two 8-bit numbers and store the result in a 2055&2057 memory location.	[L3] [CO4]	[5M]
9.	a)	Explain the A/D converter in 8051 microcontroller.	[L2] [CO4]	[5M]
	b)	Draw and explain the D/A converter circuit in 8051.	[L2] [CO5]	[5M]
10.	a)	Explain how to interface a stepper motor with the 8051 microcontroller.	[L3] [CO5]	[5M]
	b)	Design the 4*4 matrix keyboard for interface with 8051 microcontroller.	[L3] [CO5]	[5M]
11.	a)	Explain the interfacing of 16x2 LCD Module to 8051.	[L3] [CO5]	[5M]
	b)	Explain the working of traffic light control using the 8051.	[L4] [CO5]	[5M]

UNIT- V
ARM ARCHITECTURES AND PROCESSORS

1	a)	Define ARM.	[L1][CO5]	2M
	b)	What is barrel shifter.	[L1][CO5]	2M
	c)	Define link register.	[L1][CO5]	2M
	d)	State the program counter.	[L1][CO5]	2M
	e)	What is write buffer.	[L1][CO5]	2M
2		Draw the Architecture of ARM processor and explain each function in Detail	[L2][CO5]	10M
3	a)	Differentiate between ARM7 and ARM9 families.	[L2][CO5]	5M
	b)	List different families in the ARM cortex-M series.	[L1][CO5]	5M
4		Explain the architecture of ARM Cortex-M3 processor.	[L2][CO5]	10M
5	a)	Describe the mode of operations in cortex-M3.	[L2][CO5]	6M
	b)	List out the features of cortex-M3.	[L1][CO5]	4M
6	a)	Discuss the cortex-M3 Registers.	[L2][CO5]	5M
	b)	Explain the cortex-M3 Program Status Register.	[L2][CO5]	5M
7	a)	Explain any five arithmetic instructions with an example.	[L3][CO5]	5M
	b)	Explain the data processing instructions with an example.	[L3][CO5]	5M
8	a)	Discuss about stack and stack pointer.	[L2][CO5]	5M
	b)	Describe the system memory map of ARM cortex-M3.	[L2][CO6]	5M
9	a)	Write a delay program in ALP for cortex-M3.	[L3][CO3]	5M
	b)	Discuss subroutines and parameter passing.	[L2][CO5]	4M
10	a)	Define interrupt? Explain the Vectored interrupt in detail.	[L2][CO5]	6M
	b)	Explain the bit-banding in cortex-M3.	[L2][CO6]	4M
11	a)	Explain the Nested Vectored Interrupt Controller (NVIC) with neat diagram.	[L2][CO6]	6M
	b)	Describe the NVIC programmers model.	[L2][CO6]	4M

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