NARASIMHA REDDY ENGINEERING COLLEGE
(Autonomous)
Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad
Accredited by NAAC with A Grade, Accredited by NBA

ELECTRICAL AND ELECTRONICS ENGINEERING

QUESTIONBANK

Course Title : Microprocessors and Microcontroller

Course code:

Regulation: NR22

Course Objectives:

1. To familiarize the architecture of microprocessors and Microcontroller
2. To provide the knowledge about interfacing techniques of bus & memory.
3. To understand the concepts of ARM architecture.
4. To study the basic concepts of Advanced ARM processors,

Course Outcomes (CO's)

1. Understands the internal architecture, organization and assembly language programming of8086 processors.
2. Understands the interfacing with I/O and advanced devices
3 Understands the interfacing technique of 8086 with communication
4. Understands the internal architecture ,organization and assembly language programming of 8051 micro controller
5. Undeestands the interfacing of 8051 and its applications

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO11	PO12
CO1	3	3	-	2	-	-	-	-	-	-	-	-
CO2	3	3	-	2	-	-	-	-	-	-	-	-
CO3	3	3		2	-	-	-	-	-	-	-	-
CO4	3	3	3	2	-	-	-	-	-	-	-	-
CO5	3	3	3	2	-	-	-	-	-	-	-	-

UNIT I

8086 ARCHITECTURE

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		Define Microprocessor and write short notes on pipelining	L1	1	1
2		List and explain the general purpose registers of 8086 microprocessor. Also explain its special functions.	L2	1	1
3		llustrate the following Arithmetic instructions of 8086 microprocessor with details. i) AAA ii) IMUL iii) DIV iv) CWD	L3	1	2
4		Explain the Concept of memory Segmentation with base address and Offset address	L3	1	1
5		Define interrupt and explain the different interrupts presented in 8086 microprocessor.	L2	1	1
6		Define addressing mode. Write the names of 8086 addressing modes	L1	1	1
7		Define Each and Every flag in flag register	L1	1	1
8		Define assembler directive. Give any two examples.	L1	1	1
9		List out the interrupts of 8086	L2	1	1
10		Describe ALE, MN/MX ,RQ/GT Pin of 8086	L2	1	1,2
Part – B (Long Answer Questions)					
11	a)	Explain the architecture of 8086 with neat diagram	L1	1	1
	b)	Define addressing mode and explain the different addressing modes presented in 8086 Microprocessor with examples.	L2	1	1
12	a)	Explain the shift and Rotate instruction set of 8086 Microprocessor along with examples	L3	1	2
	b)	Develop an assembly language program to sort the given values in ascending order.	L3	1	1
13	a)	Explain data transfer instructions of 8086 with examples. Define assembler directive and explain different assembler directives used in 8086Microprocessor in detail.	L2	1	1
	b)	Describe the 8086 microprocessor pin-diagram.	L1	1	1
14	a)	.Enumerate the structure of physical memory organization of 8086 with neat diagram.	L1	1	1
	b)	Draw the interrupt cycle of 8086 Microprocessor and explain the nested interrupt concept in detail.	L1	1	1
15	a)	Explain minimum mode control signals of 8086	L3	1	2
	b)	Enumerate the functions of the following pins. i) TEST ii) Hold iii) QS0 & QS1 iv) S3, S4	L3	1	1
16	a)	Differentiate jump & loop instructions.	L2	1	1
	b)	Write the logical instructions available in 8086.	L1	1	1

UNIT–II

I/O INTERFACE

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		What are the advantages of DMA controller	L1	2	1
2		What is the function of SYNDET/BD signal of 8251	L3	2	2
3		What is the need of DMA	L3	2	1
4		List out different ICW's and OCW's of 8259 PIC	L2	2	1
5		How many ports does the 8255 PPI have?	L1	2	1
6		What is the primary function of DMA?	L1	2	1
7		What is the benefit of using DMA	L3	2	2
8		How many interrupt request lines does the 8259 have?	L1	2	1
9		What is the purpose of the Interrupt Mask register(IMR) in 8259	L1	2	1
10		What are the two main buses in the 8086 microprocessor	L3	2	2
Part – B (Long Answer Questions)					
11	a)	What is DMA ? Draw the internal architecture of 8257 DMA and explain its opertion	L1	2	1
	b)	Draw the internal architecture of 8255 PPI and expalin its operation in detail	L3	2	2
12	a)	Draw the interfacing diagram of A/D converter with 8086 microprocessor and writean assembly code for I along with explanation	L3	2	1
	b)	Draw the frsme of BSR and I/O mode of 8255 PPI and explain each bit of in it	L2	2	1
13	a)	Draw and explain the internal architecture of 8259	L1	2	1
	b)	Describe the procedure for interfacing of Analog to Digital conveter with 8086 microprocessor with relavant diagrams	L1	2	1
14	a)	Draw the interfacing diagram of interfacing of a two 4K*8 RAM and two 8K*8 ROM with microprocessor alomg witj memory maps	L3	2	2
	b)	Draw and explain the concept of IC DAC 0808 along with interfacing diagram	L3	2	1
15	a)	Draw the interrupt vector table of 8086 microproceesor and explain its operation in detail	L2	2	1
	b)	Write about the different modes of operation in 8255	L1	2	1

UNIT–III

COMMUNICATION INTERFACE

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		What is Serial and parallel communication in detail	L1	3	1
2		List out the few comparisons of synchronous and Asynchronous communication in detail	L3	3	2
3		Compare and contrast IEEE488 and SPI bus	L3	3	1
4		Define Trouble shooting	L2	3	1
5		Define the terms Simplex, Half Duplex and Full Duplex Communication standards	L1	3	1
6		What is prototype	L1	3	1
7		Which mode does USART support	L3	3	2
8		What is IEEE 488 used for ?	L1	3	1
9		What is RS -232 used for ?	L1	3	1
10		Give two advantages of serial communication	L3	3	2
Part – B (Long Answer Questions)					
11	a)	Draw the internal block diagram of 8251 USART and expalin the function of each block in detail	L1	3	1
	b)	Explain the following terms in detail a) RS-232 b) IEEE -488	L3	3	2
12	a)	Expalin the signification of communication devices	L3	3	1
	b)	List out the different serial communication standards ? Explain the synchronous serial communications with circuit diagram	L2	3	1
13	a)	Define trouble shooting? List out different software debugging tools present in microprocessor in detail	L1	3	1
	b)	Draw the PIN diagram of RS-232 serial communication and explain the function of each PIN in detail	L1	3	1
14	a)	List out the different methods of data communication and explain each one with example	L3	3	2
	b)	Expalin the opertion of IEEE 488 with neat block diagrams	L3	3	1
15	a)	Briefly explain the serial data transfer standards for interfacing of devices	L2	3	1
	b)	Draw and explain the synchronous mode transmitter and receiver data format of USART 8251	L1	3	1
16	a)	Explain the procedure how RS -232 is interfaced with microprocessor with one example	L1	3	1
	b)	Discuss briefly the concept of prototype and trouble shooting	L3	3	2

UNIT–IV

INTRODUCTION TO MICRO CONTROLLER

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		Compare between MOVX and MOV	3	4	2
2		Draw the blocks of Micro controller and explain each block	L3	4	1
3		Mention the special function registers used for serial communication in 8051	L2	4	1
4		Express the PSW register format in 8051 and give example instructions which effect the respective flags	L1	4	1
5		Explain the modes of operation of timers in 8051	L3	4	2
6		Explore the interrupt management of 8051 microcontroller	L3	4	1
7		Write short notes on Logical Instructions of 8051.	L2	4	1
8		Explain the use of EA bit.	L1	4	1
9		Explain how external interrupts are serviced in 8051	L3	4	2
10		Write the function of the bits PSW.3 & PSW.4.	L3	4	1
Part – B (Long Answer Questions)					
11	a)	Discuss the register set of 8051 and also discuss how memory and I/O addressing is done in 8051.	L3	4	1
	b)	Discuss internal architecture of 8051 microcontroller in detail.	L2	2	1
12	a)	List the format of PSW register of 8051 and explain each bit.	L1	2	1
	b)	Discuss about the memory organization and special function registers in 8051 microcontroller	L3		2
13	a)	Compare timer & counter? Analyze the 16-bit timer mode and 8-bit auto-reload mode of 8051 microcontroller.	L3	2	1
	b)	Describe how interrupts are handled in 8051 micro controller with details corresponding SFR"s.	L3	2	1
14	a)	Classify the types of serial communication with examples.	L2	2	1
	b)	Explain about TCON &TMOD operation with an example.	L1	2	1
15	a)	Discuss about the Data Memory organisation of 8051.	L3	2	2
	b)	Describe the register set of 8051 Microcontroller with examples	L3	2	1
16	a)	Enumerate the addressing modes of 8051 microcontroller with examples	L3	2	1
	b)	Explain TCON & TMOD ,IE,IP operation with an example in 8051.	L3	4	1

UNIT-V

INTERFACING AND APPLICATIONS

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		What is the necessity of interfacing .	L1	5	1
2		Write Process of transferring data serially using 8051.	L3	5	2
3		Compare the features of SPI and I2C communication	L3	5	1
4		Write a ALP program to toggle the p1.2 . port	L2	5	1
5		When are timer overflow bits set and reset?	L1	5	1
6		What is the use of timing and control unit?	L1	5	1
7		Draw the blocks of Micro controller and explain each block	L3	5	2
8		Explain SJMP and LJMP instruction	L3	5	1
9		Explain about SMOD and SCON register .	L2	5	1
10		Explain about Each and every bit in IE and IP register	L1	5	1
Part – B (Long Answer Questions)					
11	a)	Explain with a neat diagram how an External Memory RAM is interfaced to 8051.	L2	5	1
	b)	Interface 8 bit ADC 0800 with 8051. Explain procedure with neat diagram	L1	5	1
12	a)	Discuss the various serial data transfer schemes.	L2	5	1
	b)	Demonstrate how a digital to analog converter is interfaced with 8051 microcontroller with schematic.	L1	5	1
13	a)	Design the circuit diagram to interface a keyboard with microcontroller and explain how microcontroller recognizes the key pressed	L3	5	2
	b)	Explain the serial communication and write ALP to send bytes of data serially?	L3	5	1
14	a)	Explain the steps involved in the generating a delay using Timers..	L3	5	1
	b)	Write a ALP program to toggle all the bits of P0 continuously with 250 ms delay.	L2	5	1
15	a)	Interface two chips of 8kb EPROM with 8051 consider starting address as 0FFFH .	L1	5	1
	b)	Write short notes on synchronous and asynchronous communication standards.	L3	5	2
16	a)	Explain about how to communicate I/O devices using RS-232?	L3	5	1
	b)	Enumerate how to interface an LCD display with microcontroller.	L3	5	1

* **Blooms Taxonomy Level (BT)** (L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analyzing; L5 – Evaluating; L6 –Creating)

Course Outcomes

(CO) Program

Outcomes (PO)