



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

INFORMATION TECHNOLOGY

TUTORIAL QUESTION BANK

Course Title	MICROPROCESSORS INTERFACING AND APPLICATIONS				
Course Code	AEC023				
Programme	B.Tech				
Semester	VI	IT			
Course Type	Core				
Regulation	IARE - R16				
Course Structure	Theory			Practical	
	Lectures	Tutorials	Credits	Laboratory	Credits
	3	-	3	3	2
Chief Coordinator	Mrs. B.Lakshmi Prasanna, Assistant Professor				
Course Faculty	Mrs. B.Lakshmi Prasanna, Assistant Professor				

COURSE OBJECTIVES

The course should enable the students to:	
I	Understand the concept of microprocessor and familiarize the architecture of 8085 and 8086 processor.
II	Analyze the assembly language programming using 8086 microprocessor.
III	Develop the knowledge of microprocessor based systems and interfacing techniques.
IV	Understand the concept of Interrupts and their significance in 8086.
V	Impart the basic concepts of serial and parallel bus standards
VI	Understand the basic concept of advanced processor architectures.

COURSE OUTCOMES (COs):

CO 1	Describe the concepts of Architectures of 8085 and 8086 with its functionalities and understand the addressing modes and instructions sets of 8086.
CO 2	Describe Minimum mode and maximum mode of operation of 8086 and Analyze the Assembly language programs involving in various arithmetic and logical operations.
CO 3	Discuss the importance of 8251, 8255 and explain interfacing of I/O device with different modules.
CO 4	Analyze the various synchronous and asynchronous serial data transfer schemes in 8086
CO 5	Understand the advanced 16 and 32 bit microprocessors architectures and its features.

COURSE LEARNING OUTCOMES (CLOs):

Students, who complete the course, will have demonstrated the ability to do the following:

AEC023.01	Differentiate between 8085 and 8086 microprocessors architectures and its functionalities. Distinguish between RISC and CISC architecture based microprocessors
AEC023.02	Describe the internal Architecture of 8086 microprocessor and explain its functionalities.
AEC023.03	Describe in detail about functions of general purpose register and 8086 flag register with its functions.
AEC023.04	Explain various addressing modes and instruction set present in 8086 microprocessors and Describe in detail about the concept of interrupt, types of interrupts 8086 microprocessor.
AEC023.05	Understand and apply the fundamentals and procedures and assembler directives of assembly level programming of microprocessors.
AEC023.06	Develop low level languages like ALP in 8086 Microprocessor systems for real time applications
AEC023.07	Describe Minimum mode and maximum mode of operation and timing diagram of 8086 Microprocessor
AEC023.08	Explain various Assembly language programs involving logical, branch and call instructions.
AEC023.09	Evaluation of arithmetic expressions, string manipulation, sorting using various Assembly language programs.
AEC023.10	Identify the importance of Various modes of 8255 operation and interfacing to 8086.
AEC023.11	Discuss the interfacing diagram of I/O devices with keyboard, stepper motor, 7-segment display, LCD and digital to analog and analog to digital converter.
AEC023.12	Explain in detail about the importance of DMA,interrupt and interrupt sub routines in 8086 microprocessor
AEC023.13	Analyze and understand various synchronous and asynchronous serial data transfer schemes in 8086.
AEC023.14	Develop and design the interfacing circuit diagram of 8251USART with 8086 processor.
AEC023.15	Understand the high- speed serial communications standards, USB.
AEC023.16	Understand basic architecture of 16 bit and 32 bit Microprocessors with the help of GDT, LDT and multitasking and addressing modes.
AEC023.17	Flag register 80386: Architecture, register organization, memory access in protected mode
AEC023.18	Analyze the various advanced microprocessors internal architectures for 80X86 by paging and technical features.

TUTORIAL QUESTION BANK

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
UNIT-I				
OVERVIEW OF 8086 MICROPROCESSOR				
Part - A (Short Answer Questions)				
1.	Define Microprocessor and give the power supply & clock frequency of 8085.	Remember	CO 1	AEC023.01
2.	List out few applications of microprocessor-based system.	Remember	CO 1	AEC023.02
3.	State the difference between 8085 & 8086 microprocessor.	Remember	CO 1	AEC023.01
4.	Describe the flag register of 8086.	Understand	CO 1	AEC023.03
5.	State the difference between CISC & RISC	Remember	CO 1	AEC023.01
6.	What is stack pointer and program counter?	Understand	CO 1	AEC023.03
7.	List out features of 8086 microprocessor.	Remember	CO 1	AEC023.02
8.	Name the functional units of 8086 microprocessor.	Remember	CO 1	AEC023.02
9.	Briefly explain the three different types of control flags for the 8086.?	Remember	CO 1	AEC023.03
10.	Define the functions of an accumulator.	Understand	CO 1	AEC023.03
11.	Mention briefly the advantages of memory segmentation in 8086?	Understand	CO 1	AEC023.04
12.	Explain why 8086 internal architecture is divided into BIU & EU?	Understand	CO 1	AEC023.02
13.	Discuss the functions of BIU.	Understand	CO 1	AEC023.02
14.	What are the hardware interrupts of 8086?	Understand	CO 1	AEC023.04
15.	What are the different types of addressing modes of 8086	Understand	CO 1	AEC023.04
16.	What are macros?	Understand	CO 1	AEC023.05
17.	What are procedures?	Understand	CO 1	AEC023.05
18.	What is assembler?	Understand	CO 1	AEC023.05
19.	What is the maximum memory size that can be addressed by 8086?	Remember	CO 1	AEC023.04
20.	Explain SEGMENT & ENDS	Remember	CO 1	AEC023.05
Part - B (Long Answer Questions)				
1.	Explain the following 8086 microprocessor pins functionality. a. ALE b. INTR c. NMI d. CLK	Understand	CO 1	AEC023.02
2.	Explain the following 8086 microprocessor pins functionality. a. READY b. TEST c. HOLD d. RESET	Understand	CO 1	AEC023.02
3.	Describe the functionality of 8086 microprocessor pins with the help of neat pin-diagram.	Understand	CO 1	AEC023.02
4.	Draw and discuss the internal block diagram of 8086.	Understand	CO 1	AEC023.02
5.	Discuss about the functions of the following pins. a. TEST b. RQ/GT0 & RQ/GT1 c. QS0 & QS1 d. S0,S1,S2	Understand	CO 1	AEC023.02

6.	Describe in detail about various interrupts used in 8086 microprocessor with examples.	Understand	CO 1	AEC023.04
7.	Explain Arithmetic instruction set of 8086 microprocessor with the help of examples.	Remember	CO 1	AEC023.04
8.	What is the maximum memory addressing and I/O addressing capability of 8086	Understand	CO 1	AEC023.04
9.	Illustrate various data transfer instructions of 8086 microprocessor with examples.	Understand	CO 1	AEC023.04
10.	Discuss the bit manipulation instructions of 8086 microprocessor with examples.	Understand	CO 1	AEC023.04
11.	Explain various string instructions used in 8086 microprocessor with examples.	Understand	CO 1	AEC023.04
12.	List out the assembler directives of 8086 micro processor? And explain them with examples.	Understand	CO 1	AEC023.05
13.	Explain the memory segmentation and instruction Queue of 8086.	Understand	CO 1	AEC023.04
14.	Explain the control and conditional flags of 8086.	Understand	CO 1	AEC023.03
15.	Draw the block diagram of 8086 and explain BIU and EU	Understand	CO 1	AEC023.02
16.	List out assembler directives of 8086 and explain them briefly?	Understand	CO 1	AEC023.05
17.	What are the different segments registers in 8086? Why need memory segmentation?	Remember	CO 1	AEC023.03
19.	Define interrupt and explain the different interrupts presented in 8086 microprocessor.	Understand	CO 1	AEC023.04
20.	What is the minimum number of segment registers that are necessary to provide segmentation? How do access common	Understand	CO 1	AEC023.03
21.	Draw the register organization of 8086 and explain typical applications of each register.	Understand	CO 1	AEC023.03
Part - C (Analytical Questions)				
1.	Calculate the effective address & physical address of the following instructions.	Understand	CO 1	AEC023.04
2.	Calculate the physical address is represented by i. 4370:561EH ii. 7A32:0028H	Understand	CO 1	AEC023.04
3.	Evaluate the physical address of the top of the stack? If the stack segment register contains 3000H and the stack pointer Register contains 8434H.	Understand	CO 1	AEC023.04
4.	Identify the memory address of the next instruction executed by the microprocessor, when operated in the real mode, for the following CS:IP combinations: i) CS=1000H and IP=2000H ii) CS=2000H and IP=10000H	Understand	CO 1	AEC023.04
5.	Describe the function of the following signals. a) NMI b) LOCK c) <u>TEST</u> d) RESET	Understand	CO 1	AEC023.02
6.	Distinguish procedures and macros and JUMP Instructions.	Understand	CO 1	AEC023.05
7.	Explain the following instructions. i. WAIT ii. HLT iii. ESC iv. NOP	Understand	CO 1	AEC023.02
8.	Discuss in detail about the instructions formats of 8086 with example.	Understand	CO 1	AEC023.04
9.	Explain in detail about the various addressing modes of 8086 with examples.	Understand	CO 1	AEC023.04

10.	Describe the operation carried out when the following instructions are executed by 8086. i. MOV [SI],AX ii. MOV [BX],CX iii. XLAT iv. MUL,BL v. DIV,BL	Understand	CO 1	AEC023.04
S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
UNIT – II				
8086 AEESEMBLY LANGUAGE PROGRAMMING				
Part – A (Short Answer Questions)				
1.	List the operating modes of 8086 microprocessor.	Remember	CO 2	AEC023.07
2.	Discuss the minimum mode signals of 8086 microprocessor.	Remember	CO 2	AEC023.07
3.	List the maximum mode signals of 8086 microprocessor.	Remember	CO 2	AEC023.07
4.	What is an Instruction format?	Understand	CO 2	AEC023.07
5.	Explain pins ALE, BHE/S7, DEN, DT/R of 8086 microprocessor.	Understand	CO 2	AEC023.07
6.	Explain the following pins i. READY, ii. MN/MX, iii. HOLD and iv. HLDA In 8086 microprocessor.	Understand	CO 2	AEC023.07
7.	Discuss about branch instructions.	Understand	CO 2	AEC023.08
8.	Discuss about logical instructions.	Understand	CO 2	AEC023.08
9.	Draw the format of 8086 flag register .	Understand	CO 2	AEC023.08
10.	Discuss the following instructions of 8086. a) ADC b) AAS c) IMUL d) CBW	Understand	CO 2	AEC023.09
11.	Give two conditional jump instructions with an example.	Understand	CO 2	AEC023.09
12.	Write about Assembly Condition Codes?	Understand	CO 2	AEC023.08
13.	What is the function of i) MOVS/MOVS/BS/MOVSW ii) CMPS/CMPSB/CMPSW Instructions iii) REP/REPE/REPZ/REPNE/REPNZ iv) LODS/LODSB/LODSW	Understand	CO 2	AEC023.08

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
14.	What is Assembly Language Programming?	Remember	CO 2	AEC023.08
15.	What are the advantages of Assembly Language Programming?	Remember	CO 2	AEC023.08
16.	What Is mean by Cross- compiler?	Remember	CO 2	AEC023.08
17.	What is Assembly Recursion?	Remember	CO 2	AEC023.08
18.	What is Assembly Conditions?	Remember	CO 2	AEC023.08
19.	What are DAA and DAS Instructions?	Understand	CO 2	AEC023.08
20.	What is the function of CALL and RET Instructions	Understand	CO 2	AEC023.08
Part - B (Long Answer Questions)				
1.	Explain various data transfer instructions of 8086 microprocessor with examples.	Understand	CO 2	AEC023.09
2.	List various differences between procedures and macros used in 8086 microprocessor.	Understand	CO 2	AEC023.08
3.	Draw the timing diagrams of minimum mode write operation and explain in detail.	Understand	CO 2	AEC023.07
4.	Explain different maskable and non maskable interrupts of 8086 microprocessor.	Understand	CO 2	AEC023.07
5.	Explain the following instructions. i. WAIT ii. HLT iii. ESC iv. NOP	Understand	CO 2	AEC023.09
6.	Differentiate between jump and loop instructions used in 8086 microprocessor.	Understand	CO 2	AEC023.09
7.	Write an assembly language program to reverse the given string "1, 2, 3, 4,5, 6".	Remember	CO 2	AEC023.09
8.	Discuss about String Instructions with examples.	Understand	CO 2	AEC023.08
9.	Write an assembly language program to reverse a string.	Understand	CO 2	AEC023.09
10.	Write an assembly language program to search a number in the string.	Understand	CO 2	AEC023.09
11.	Write an assembly language program to sort the given values in ascending order.	Remember	CO 2	AEC023.09
12.	List various logical instructions available in 8086 microprocessor with examples.	Remember	CO 2	AEC023.09
13.	Construct an Interface of two 4k×8 EPROMS & and two 4k×8 RAM chips with 8086. Select suitable memory map.	Understand	CO2	AEC023.09
14.	Draw and explain timing diagrams of 8086 in minimum mode?	Understand	CO 2	AEC023.07
15.	Draw and explain timing diagrams of 8086 in maximum mode?	Understand	CO 2	AEC023.07
16.	Write an assembly language program to convert Packed BCD to Unpacked BCD.	Understand	CO 2	AEC023.09
17.	Write an assembly language program to move a block a data from one memory location to another memory location?	Understand	CO 2	AEC023.09

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
18.	Write an assembly language program to delete a byte in a string?	Understand	CO 2	AEC023.09
19.	Enlist the advantages of assembly language programming over machine language?	Understand	CO2	AEC023.09
20.	Bring out differences between static and dynamic RAM.	Understand	CO2	AEC023.07
Part - C (Analytical Questions)				
1.	Write an assembly language program to sort the values in ascending order.	Remember	CO 2	AEC023.09
2.	Write an assembly language program to display „IARE MPMC LAB“ on the screen.	Understand	CO 2	AEC023.09
3.	Write an assembly language program to convert a sixteen bit binary number to its gray equivalent	Remember	CO 2	AEC023.09
4.	Write an assembly language program to find factorial of a given number.	Remember	CO 2	AEC023.09
5.	Write an assembly language program to convert a given sixteen bit binary number to its gray equivalent.	Remember	CO 2	AEC023.09
6.	Write an assembly language program to insert a byte into the give array.	Remember	CO 2	AEC023.08
7.	Write an assembly language program to convert ASCII to BCD.	Understand	CO 2	AEC023.08
8.	Write a delay loop which produces a delay of 500µsec on an 8086 with 5- MHz clock.	Understand	CO 2	AEC023.08
9.	Write an assembly language program to convert unpacked BCD to ASCII.	Understand	CO 2	AEC023.09
10.	Write an assembly language program to find sum of squares.	Understand	CO 2	AEC023.09
UNIT-III				
8255 PROGRAMMABLE PERIPHERAL INTERFACE (PPI)				
Part - A (Short Answer Questions)				
1.	List out the features of the 8255 PPI (Programmable Peripheral Interface).	Remember	CO 3	AEC023.10
2.	Write how many I/O modes of operations present in 8255 Programmable Peripheral Interface.	Remember	CO 3	AEC023.10
3.	Write the applications of stepper motor.	Remember	CO 3	AEC023.11
4.	Discuss the need for Analog to Digital Converter and Digital to Analog Converter.	Understand	CO 3	AEC023.11
5.	Write the applications of Analog to Digital Converter and Digital to Analog Converter.	Remember	CO 3	AEC023.11
6.	What is bit set or reset (BSR) mode in 8255?	Understand	CO 3	AEC023.10
7.	What is the use of Port-C signals in 8255?	Understand	CO 3	AEC023.10
8.	What is the purpose of 8255 in the interfacing with external devices?	Understand	CO 3	AEC023.10
9.	List out the features of the 8255 PPI (Programmable Peripheral Interface).	Remember	CO 3	AEC023.10

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
10.	Write how many I/O modes of operations present in 8255 Programmable Peripheral Interface.	Remember	CO 3	AEC023.10
CIE-II				
1.	Write the modes of 8257 DMA controller.	Remember	CO 3	AEC023.12
2.	What is the need of 8257 DMA controller.	Understand	CO 3	AEC023.12
3.	Define interrupt vector table.	Remember	CO 3	AEC023.12
4.	Define interrupt service routine.	Remember	CO 3	AEC023.12
5.	Distinguish the difference between mask able and non-mask able interrupts?	Understand	CO 3	AEC023.12
6.	What is meant by polling?	Remember	CO 3	AEC023.12
7.	Write the priorities of 8086 interrupts.	Remember	CO 3	AEC023.12
8.	List out the uses of INT-03H interrupt.	Remember	CO 3	AEC023.12
9.	Explain interrupt response of a 8086 microprocessor.	Understand	CO 3	AEC023.12
10.	List out the different Types of interrupts in 8086 microprocessor.	Remember	CO 3	AEC023.12
Part - B (Long Answer Questions)				
1.	Explain the internal architecture of 8259 Programmable Interrupt Controller with a neat block diagram.	Remember	CO 3	AEC023.10
2.	Explain the control word format of 8255 Programmable Peripheral Interface in I/O & BSR mode.	Understand	CO 3	AEC023.10
3.	Explain in detail how a display device can be interfaced with 8086 microprocessor.	Understand	CO 3	AEC023.10
4.	Discuss how a 4×4 key board matrix is connected to 8255 Programmable Peripheral Interface.	Understand	CO 3	AEC023.11
5.	Explain the different modes of operation of 8255 (Programmable Peripheral Interface).	Understand	CO 3	AEC023.11
6.	Draw and explain the interfacing diagram of 8255 with 8086 microprocessor.	Understand	CO 3	AEC023.11
7.	Describe the architecture of 8255 Programmable Peripheral Interface and explain.	Understand	CO 3	AEC023.10
8.	Explain the control word format of 8255 in I/O and BSR mode.	Understand	CO 3	AEC023.10
9.	Draw and explain the pin diagram of 8255 Programmable Peripheral Interface.	Understand	CO 3	AEC023.10
10.	Write an assembly language program to interface stepper motor with 8086 microprocessor.	Remember	CO 3	AEC023.11
CIE-II				
11.	Write an assembly language program to interface stepper motor with 8086 microprocessor.	Understand	CO 3	AEC023.11

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
12.	Explain the need of DMA controller and its interfacing to 8086.	Remember	CO 3	AEC023.12
13.	Explain the construction of interrupt vector table used in 8086 Microprocessor.	Understand	CO 3	AEC023.12
14.	Explain interrupt structure of 8086. What is vector table? What are the operations done during handling an interrupt service	Understand	CO 3	AEC023.12
15.	List different types of DOS interrupt?	Remember	CO 3	AEC023.12
16.	Discuss different types of BIOS interrupt?	Remember	CO 3	AEC023.12
17.	Demonstrate the operating modes of 8257A	Understand	CO 3	AEC023.12
18.	Describe the architecture of 8257 DMA controller?	Remember	CO 3	AEC023.12
Part - C (Analytical Questions)				
1	Write an assembly language Program to generate the square wave of voltage from 1V to 5V with frequency of 5 KHz. (Assume oscillator frequency of 8 MHz).	Remember	CO 3	AEC023.11
2	Write an assembly language program to convert analog to digital using 8086.	Understand	CO 3	AEC023.11
3	Write an assembly language program to interface stepper motor with 8086 and rotate in clock wise direction with speed of 30RPM. (Assume oscillator frequency of 8 MHz).	Remember	CO 3	AEC023.11
4	Write an assembly language Program to interface 4×4 key board matrix with 8086 using 8055.	Remember	CO 3	AEC023.11
5	Write an assembly language program to interface stepper motor with 8086 and rotate in anti clock wise direction with speed of 30RPM. (Assume oscillator frequency of 8 MHz).	Understand	CO 3	AEC023.11
6	Write an assembly language Program to generate the triangular wave of voltage from 1V to 5V. (Assume oscillator frequency of 8MHz).	Remember	CO 3	AEC023.11
CIE-II				
1	Draw mode set register bit format, status register bit format of 8257.	Remember	CO 3	AEC023.12
2	Explain about interrupt sequence in 8086 system.	Understand	CO 3	AEC023.12
3	Write an assembly language Program to generate the saw tooth wave of voltage from 1V to 5V. (Assume oscillator frequency of 8MHz).	Remember	CO 3	AEC023.11
4	Discuss about operating modes of 8257 DMA controller.	Understand	CO 3	AEC023.12
5	Discuss about the operation of 8257 DMA controller with diagram.	Understand	CO 3	AEC023.12
6	Explain in detail about signal descriptions of 8257 DMA controller.	Understand	CO 3	AEC023.12

**UNIT-IV
SERIAL DATA TRANSFER SCHEMES**

Part - A (Short Answer Questions)

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
1.	Describe about communication in microprocessor.	Understand	CO 4	AEC023.13
2.	Define modem.	Remember	CO 4	AEC023.13
3.	Explain the types of communications.	Remember	CO 4	AEC023.13
4.	Define,USART (Universal Synchronous Asynchronous Receiver Transmitter).	Remember	CO 4	AEC023.14
5.	Write the use of 8251 (Universal Synchronous Asynchronous Receiver Transmitter) chip.	Remember	CO 4	AEC023.14
6.	Describe the important features of 8251(Universal Synchronous Asynchronous Receiver Transmitter).	Remember	CO 4	AEC023.14
7.	List out the serial communication standards available.	Remember	CO 4	AEC023.15
8.	Write the most commonly used signals in RS232.	Remember	CO 4	AEC023.15
9.	Describe and sketch the frame format of mode word of 8251(Universal Synchronous Asynchronous Receiver	Understand	CO 4	AEC023.14
10.	Distinguish between synchronous and asynchronous serial data transmission techniques.	Understand	CO 4	AEC023.13
11.	Define Baud rate.	Remember	CO 4	AEC023.13
12.	Discuss the data Transmission standards and their specifications.	Understand	CO 4	AEC023.15
13.	Give the specifications of serial communication mode RS232C.	Remember	CO 4	AEC023.13
14.	Explain about the following Communication standards i. Simplex ii. Half Duplex iii. Full Duplex	Understand	CO 4	AEC023.15
15.	Describe the status register of 8251 USART (Universal Synchronous Asynchronous Receiver Transmitter).	Understand	CO 4	AEC023.14
16.	Write the use of modem control unit in 8251(Universal Synchronous Asynchronous Receiver Transmitter).	Remember	CO 4	AEC023.14
17.	Discuss various types of serial communication techniques used in 8086 microprocessor.	Understand	CO 4	AEC023.13
18.	Explain the interfacing of 8251 USART with 8086 microprocessor with necessary circuit diagram	Understand	CO 4	AEC023.14
19.	Explain why serial data transfer is preferred over parallel data transfer for microprocessor communication.	Understand	CO 4	AEC023.13
20.	What is USB Host Controller?	Understand	CO 4	AEC023.15

Part – B (Long Answer Questions)

1.	Draw the internal block diagram of 8251 USART and explain about each block in detail.	Understand	CO 4	AEC023.14
2.	Discuss about the pin diagram of 8251 USART (Universal Synchronous Asynchronous Receiver Transmitter).	Understand	CO 4	AEC023.14
3.	Draw and explain the synchronous mode transmitter and receiver data formats of 8251.	Understand	CO 4	AEC023.13

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
4.	Discuss in detail about Asynchronous and synchronous serial communication with neat diagrams.	Understand	CO 4	AEC023.13
5.	Explain the pin structure of RS232C & also discuss about voltage & current specifications of RS 232C.	Understand	CO 4	AEC023.15
6.	Draw the logic diagram to convert TTL to RS232C conversion and explain the operation.	Understand	CO 4	AEC023.15
7.	Describe the logic diagram to convert RS232C to TTL conversion and explain the operation.	Understand	CO 4	AEC023.15
8.	Explain the about serial data transfer schemes, i. Universal Serial Bus ii. IEEE-488.	Understand	CO 4	AEC023.15
9.	Discuss in detail about Mode Instruction formats in Asynchronous and synchronous modes.	Understand	CO 4	AEC023.14
10.	Explain about i. Command instruction format ii. Status Read Instruction format	Understand	CO 4	AEC023.14
11.	Explain about the following pins of 8251A i. Syndet/BD ii. RXRDY iii. CTS iv. TXRDY	Understand	CO 4	AEC023.14
12.	Explain the mode instruction control word format of 8251.	Understand	CO 4	AEC023.14
13.	Draw and discuss the status word format of 8251.	Understand	CO 4	AEC023.14
14.	Draw and discuss the asynchronous mode transmitter and receiver data formats of 8251.	Understand	CO 4	AEC023.14
15.	Draw and discuss the synchronous mode transmitter and receiver data formats of 8251.	Understand	CO 4	AEC023.14
16.	Draw and discuss the internal architecture of USART 8251.	Understand	CO 4	AEC023.14
17.	Explain the pin structure of RS232C	Understand	CO 4	AEC023.15
18.	Explain about the following pins of 8251A i. RXD ii. RXRDY iii. CTS iv. TXEMPTY	Understand	CO 4	AEC023.1
19.	Explain in detail about the USB and give its features.	Understand	CO 4	AEC023.15
20.	Explain the most commonly used signals in RS232 serial communication.	Understand	CO 4	AEC023.15
Part - C (Analytical Questions)				
1.	Design the hardware interface circuit for interfacing 8251 USART with 8086?	Understand	CO 4	AEC023.14
2.	Write an assembly language program to transmit 100 bytes of data string starting at location 2000:5000 with the following specifications. Set the 8251A in Asynchronous mode as a transmitter with even parity enabled,2 stop bits,8 bit character length, frequency 160khz and baud rate 10k.	Understand	CO 4	AEC023.14
3.	Write an assembly language program to receive 100 bytes of data string store at location 3000:4000 with the following specifications. Set the 8251A in Asynchronous mode as a transmitter with even parity enabled,2 stop bits,8 bit character length, frequency 160khz and baud rate 10k.	Understand	CO 4	AEC023.14

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
4	Write an assembly language program to transmit and receive 1000 bytes of data string String starting at location 2000:5000H and store at 3000:4000H with the following specifications. Set the 8251A in Asynchronous mode as a transmitter with even parity enabled, 2 stop bits, 8 bit character length, frequency 160khz and baud rate 10k.	Understand	CO 4	AEC023.14
5.	What are the functional types used in control words of 8251	Understand	CO 4	AEC023.14
6.	Draw the block diagram of 8251 and explain about each block.	Understand	CO 4	AEC023.14
7.	Explain the transmission and reception of serial data using 8251 indicating the functions of various registers in it.	Understand	CO 4	AEC023.14
8.	Draw the block diagram and explain the operations of 8251 serial communication interface.	Understand	CO 4	AEC023.14
9.	Define USART? Explain in detail about USART.	Understand	CO 4	AEC023.14
10.	Write an assembly language program to initialize 8251 and transmit 100bytes of data.	Understand	CO 4	AEC023.14
11.	Write an assembly language program to initialize 8251 and receive 100bytes of data.	Understand	CO 4	AEC023.14
UNIT-V				
ADVANCED MICROPROCESSORS				
Part - A (Short Answer Questions)				
1.	What are the salient features of 80186 advanced microprocessor?	Understand	CO 5	AEC023.18
2.	What are the salient features of 80286 advanced microprocessor?	Understand	CO 5	AEC023.18
3.	List out the basic features of 80386 advanced microprocessor.	Understand	CO 5	AEC023.17
4.	What are the basic technical features of 80486 advanced microprocessor	Understand	CO 5	AEC023.18
5.	Define virtual memory.	Understand	CO 5	AEC023.18
6.	Draw and discuss the flag register of 80286 advanced microprocessor.	Understand	CO 5	AEC023.16
7.	What are the different interrupts available in 80286 advanced Microprocessor?	Remember	CO 5	AEC023.16
8.	Define Task privilege?	Remember	CO 5	AEC023.17
9.	What is descriptor table? Differentiate between GDT and LDT.	Understand	CO 5	AEC023.16
10.	Explain LDT, GDT and IDT.	Understand	CO 5	AEC023.16
11.	Define paging Scheme.	Understand	CO 5	AEC023.18
12.	List out Register Organization of 80386?	Understand	CO 5	AEC023.17
13.	Give the Signal Descriptions of 80386.	Understand	CO 5	AEC023.17
14.	What are the features of 80486?	Remember	CO 5	AEC023.18
15.	What is protected virtual address mode?	Understand	CO 5	AEC023.17
16.	What is the advantage of pages in paging?	Understand	CO 5	AEC023.18

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
17.	Describe about Task Privilege?	Remember	CO 5	AEC023.18
18.	Describe about Descriptor Privilege?	Remember	CO 5	AEC023.18
19.	Describe about Selector Privilege?	Remember	CO 5	AEC023.18
20.	Give the Signal Descriptions of 80386	Understand	CO 5	AEC023.17
Part - B (Long Answer Questions)				
1.	Explain the architecture of 80386 advanced microprocessor with neat diagram.	Understand	CO 5	AEC023.17
2.	Explain the basic concepts of 80386 advanced microprocessor paging system.	Understand	CO 5	AEC023.17
3.	Explain about different addressing modes supported by 80386 processor.	Understand	CO 5	AEC023.17
4.	Explain the following signal functions of 80386. i. BE ₀ -BE ₃ ii. W/R iii. D/C iv. ADS v. NA vi. BS ₁₆	Understand	CO 5	AEC023.17
5.	Draw and discuss the flag register of 80286 advanced microprocessor in detail.	Remember	CO 5	AEC023.17
6.	Explain the Real mode and protected mode concepts of 80386 Microprocessor.	Understand	CO 5	AEC023.17
7.	Draw the FLAG register of 80386 processor and explain the function of each flag with example.	Understand	CO 5	AEC023.17
8.	List the four major processing units in an 80286 microprocessor and briefly describe the function of each.	Understand	CO 5	AEC023.16
9.	Explain in detail Register Organization of 80286 advanced microprocessor.	Understand	CO 5	AEC023.16
10.	Discuss in detail various Operating Modes of 80286 advanced microprocessor.	Remember	CO 5	AEC023.16
11.	Draw neatly the Pin Diagram of 80286 advanced microprocessor and explain.	Understand	CO 5	AEC023.16
12.	Explain in detail Register Organization of 80386 advanced microprocessor.	Understand	CO 5	AEC023.17
13.	Draw and explain architecture of 80486 advanced microprocessor with the help of neat diagram.	Understand	CO 5	AEC023.18
14.	Explain the terms segmentation and paging of 80386 processor.	Understand	CO 5	AEC023.17
15.	Explain the execution of all instructions of 80386 with suitable examples.	Understand	CO 5	AEC023.17
16.	Draw and discuss the internal architecture of 80386 in detail?	Understand	CO 5	AEC023.17
17.	Explain the data type of 80386.	Understand	CO 5	AEC023.17
18.	Discuss the instruction set of 80386.	Understand	CO 5	AEC023.17

S.No	QUESTION	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
19.	Discuss the Virtual mode and enhanced mode of 80386.	Understand	CO 5	AEC023.17
20.	Describe 80386 flag register with significance of each and every bit in detail. How does it differ from 8086?	Understand	CO 5	AEC023.17
Part - C (Analytical Questions)				
1.	Explain the memory management unit of 80286 advanced microprocessor.	Remember	CO 5	AEC023.16
2.	Explain the Processor Status Word (PSW) in 80286 advanced microprocessor.	Remember	CO 5	AEC023.16
3.	Discuss the following signals available in 80286. i. PEREQ ii. PEACK iii. CODE/INTA iv. CAPs v. BUSY vi. ERROR	Remember	CO 5	AEC023.16
4.	Discuss in detail about the physical address formation in real address mode.	Understand	CO 5	AEC023.16
5.	What are the different addressing modes supported by 80286 advanced microprocessor.	Understand	CO 5	AEC023.16
6.	Define and explain the following terms. i. Task Privilege ii. Descriptor Privilege	Understand	CO 5	AEC023.17
7.	Explain the physical address formation in protected virtual address mode (PVAM).	Understand	CO 5	AEC023.16
8.	Discuss in detail about Descriptor tables in 80386 advanced microprocessor.	Understand	CO 5	AEC023.17
9.	Illustrate the Page Table and Page Directory Entry with example.	Understand	CO 5	AEC023.17
10.	Define and discuss in detail about the Task State Segment and Task Descriptor.	Understand	CO 5	AEC023.17

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