Hall Ticket No ☐☐☐☐☐☐☐☐☐☐   Question Paper Code: AEC021

INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER-I

B.Tech V Semester End Examinations, November - 2019
Regulations: IARE-R16
MICROPROCESSOR AND INTERFACING
(Computer Science and Engineering)

Time: 3 hours   **Max. Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1	a)	Describe the functionality and pin configuration of 8086 microprocessor pins with the help of neat pin-diagram.	[7M]
	b)	Evaluate the physical address of the top of the stack? If the stack segment register contains 3000H and the stack pointer register contains 8434H.	[7M]

2	a)	List out the assembler directives of 8086 micro processor and explain them with examples.	[7M]
	b)	Describe the operation carried out when the fallowing instructions are executed by 8086.	[7M]

     i.   MOV [SI],AX
    ii.   MOV [BX],CX
   iii.   XLAT
   iv.   MUL,BL
    v.   DIV,BL

UNIT – II

3	a)	Discuss in detail about the the minimum mode and maximum mode signals of 8086 microprocessor.	[7M]
	b)	Explain the following instructions.	[7M]

    i.   WAIT
    ii.   HLT
   iii.   ESC
   iv.   NOP

4	a)	Define DMA 8257? Describe the functionality of 8257 Direct Memory Access Controller with neat block diagram.	[7M]
	b)	Write an assembly language program to insert and delete a byte into the give array using 8086 microprocessor .	[7M]

UNIT – III

5	a)	Explain the internal architecture of 8259 Programmable Interrupt Controller with a neat block diagram.	[7M]
	b)	Describe the architecture of 8255 Programmable Peripheral Interface and explain the control word format of 8255 in I/O and BSR mode.	[7M]

6	a)	Write an assembly language program to rotate stepper motor in anticlock wise direction with 30rpm using 8086 microprocessor.	[7M]
	b)	Explain interrupt structure of 8086. What is vector table? What are the operations done during handling an interrupt service routine?	[7M]

UNIT – IV

7	a)	Define USART? Draw the internal block diagram of 8251 USART and explain functionality of each block in detail.	[7M]
	b)	Explain briefly about the following pins of 8251A i. Syndet/BD ii. RXRDY iii. CTS iv. TXRDY	[7M]

8	a)	Discuss in detail about the following serial data transfer schemes, i. Universal Serial Bus ii. IEEE-488	[7M]
	b)	Draw the logic diagram to convert TTL to RS232C conversion and explain the operation breifly.	[7M]

UNIT – V

9	a)	What are the operating modes of 80286? Discuss in detail about operating modes of 80286 advanced microprocessor.	[7M]
	b)	Draw and explain indetail about the Register Organization of 80386 advanced microprocessor and compare with 80286 advanced microprocessor.	[7M]

10	a)	Write the features of 80286 advanced microprocessor and explain in detail the memory management unit of 80286 advanced microprocessor.	[7M]
	b)	Define and explain the following terms. i. Descriptor Privilege ii. Task Privilege iii. Selector Privilege	[7M]

COURSE OBJECTIVES:

I	Understand the concept of microprocessor and familiarize the architecture of 8085and 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:

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:

AEC021.01	Differentiate between 8085 and 8086 microprocessors architectures and its functionalities. Distinguish between RISC and CISC architecture based microprocessors
AEC021.02	Describe the internal Architecture of 8086 microprocessor and explain its functionalities.
AEC021.03	Describe in detail about functions of general purpose register and 8086 flag register with its functions.
AEC021.04	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.
AEC021.05	Understand and apply the fundamentals and procedures and assembler directives of assembly level programming of microprocessors.
AEC021.06	Develop low level languages like ALP in 8086 Microprocessor systems for real time applications
AEC021.07	Describe Minimum mode and maximum mode of operation and timing diagram of 8086 Microprocessor
AEC021.08	Explain various Assembly language programs involving logical, branch and call instructions.
AEC021.09	Evaluation of arithmetic expressions, string manipulation, sorting using various Assembly language programs.
AEC021.10	Identify the importance of Various modes of 8255 operation and interfacing to 8086.
AEC021.11	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.
AEC021.12	Explain in detail about the importance of interrupt and interrupt sub routines in 8086 microprocessor
AEC021.13	Explain the advance architectures of PIC and also the importance of interfacing a interrupt controller in PIC.
AEC021.14	Analyze and understand various synchronous and asynchronous serial data transfer schemes in 8086.

AEC021.15	Develop and design the interfacing circuit diagram of 8251USART with 8086 processor.
AEC021.16	Understand the high- speed serial communications standards, USB.
AEC021.17	Understand basic architecture of 16 bit and 32 bit Microprocessors with the help of GDT, LDT and multitasking and addressing modes.
AEC021.18	Flag register 80386: Architecture, register organization, memory access in protected mode
AEC021.19	Analyze the various advanced microprocessors internal architectures for 80X86 by paging and technical features.

MAPPING OF SEMESTER END EXAMINATION TO COURSE LEARNING OUTCOMES:

SEE Question No.		CLO Code	Course learning Outcomes	CO code	Blooms Taxonomy Level
1	a	AEC021.04	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.	CO 1	Understand
	b	AEC021.04	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.	CO 1	Understand
2	a	AEC021.06	Develop low level languages like ALP in 8086 Microprocessor systems for real time applications	CO 1	Understand
	b	AEC021.06	Develop low level languages like ALP in 8086 Microprocessor systems for real time applications	CO 1	Understand
3	a	AEC021.07	Describe Minimum mode and maximum mode of operation and timing diagram of 8086 Microprocessor	CO 2	Remember
	b	AEC021.08	Explain various Assembly language programs involving logical, branch and call instructions.	CO 2	Understand
4	a	AEC021.08	Explain various Assembly language programs involving logical, branch and call instructions.	CO 2	Understand
	b	AEC021.09	Evaluation of arithmetic expressions, string manipulation, sorting using various Assembly language programs.	CO 2	Understand
5	a	AEC021.10	Identify the importance of Various modes of 8255 operation and interfacing to 8086.	CO 3	Remember
	b	AEC021.10	Identify the importance of Various modes of 8255 operation and interfacing to 8086.	CO 3	Understand
6	a	AEC021.11	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.	CO 3	Remember
	b	AEC021.12	Explain in detail about the importance of interrupt and interrupt sub routines in 8086 microprocessor	CO 3	Understand
7	a	AEC021.15	Develop and design the interfacing circuit diagram of 8251USART with 8086 processor.	CO 4	Understand
	b	AEC021.14	Analyze and understand various synchronous and asynchronous serial data transfer schemes in 8086	CO 4	Remember
8	a	AEC021.16	Understand the high- speed serial communications standards, USB.	CO 4	Understand
	b	AEC021.16	Understand the high- speed serial communications standards, USB.	CO 4	Understand
9	a	AEC021.17	Understand basic architecture of 16 bit and 32 bit Microprocessors with the help of GDT, LDT and multitasking and addressing modes.	CO 5	Remember
	b	AEC021.18	Flag register 80386: Architecture, register organization, memory access in protected mode	CO 5	Understand

SEE Question No.		CLO Code	Course learning Outcomes	CO code	Blooms Taxonomy Level
10	a	AEC021.17	Understand basic architecture of 16 bit and 32 bit Microprocessors with the help of GDT, LDT and multitasking and addressing modes.	CO 5	Remember
	b	AEC021.18	Flag register 80386: Architecture, register organization, memory access in protected mode	CO 5	Understand

Signature of Course Coordinator   **HOD, CSE**