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

MODEL QUESTION PAPER-II

B.Tech V Semester End Examinations(Supplementary), November- 2018
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) Explain in dtwil about the register organization model in 8086 with examples   [7M]
   b) Explain the function of the following flags in 8086 micoprocessor.   [7M]
          i. Overflow Flag
          ii. Direction Flag
          iii. Interrupt-enable Flag
          iv. Auxiliary carry Flag

2 a) List out the instruction set types 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 AX, DX
          ii. ADD [BX], [BX+SI+7]
          iii. JNZ label1

UNIT – II

3 a) Write an assembly language program to find the largest number from an array of 5 numbers   [7M]
   b) Explain the following pins with respect to 8086 microprocessor..   [7M]
        i.   ALE
       ii.   HOLD
      iii.   IO/$\overline{M}$
       iv.   DEN

4 a) With the help of neat sketch, explain the timing diagram of the write cycle for minimum mode configuration for 8086 microprocessor   [7M]
   b) What is function of a typical DMA Controller. Explain mode set register configuration in 8257   [7M]

UNIT – III

5 a) Explain Mode 1 configuration in 8255 with the relevant timing waveforms.   [7M]
   b) Describe different external interrupts in 8086 and hence explain what happens when an Interrupt occurs.   [7M]

6	a)	Draw the block diagram of 8259 and explain the following	[7M]

           i. IRR
          ii. ISR
        iii. IMR
       iv. Priority Resolver

	b)	Interface an ADC 0808 with 8086 using 8255 ports. Use port A of 8255 for transferring digital data output of ADC to the CPU and port C for control signals.Assume that an analog input is present of the ADC and a clock input of suitable frequency is available for ADC.Draw the interfacing diagram and write the necessary ALP to read the analog voltage and store in AL register.	[7M]

UNIT – IV

7	a)	Compare Synchronous and Asynchronous Transmission with examples.	[7M]
	b)	Explain the bit configuration mode register of 8251 with the help of neat diagram	[7M]

8	a)	Explain in detail about the the bit configuration of command instruction of 8251.	[7M]
	b)	Write a assembly language program to initialize 8251A at address 00FFH for the following specifications	[7M]

            i. Character length- 6 bits
          ii. Parity even
        iii. Baud rate 64 x
       iv. Stop bit I
        v. DTR and RTS asserted
       vi. Error flag reset
      vii. Trasmitterenable

UNIT – V

9	a)	Differentiate the real mode and protected operation of advanced microprocessor.	[7M]
	b)	With neat sketch explain the address conversion mechanism takes place in advanced microprocessor.	[7M]

10	a)	Compare the features of 80286 and 80386 microprocessor.	[7M]
	b)	Draw the architecture of 80386 processor and explain each block with its features.	[7M]

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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	AEC021.08	Explain various Assembly language programs involving logical, branch and call instructions.	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

SEE Question No.		CLO Code	Course learning Outcomes	CO Code	Blooms Taxonomy Level
	b	AEC021.18	Flag register 80386: Architecture, register organization, memory access in protected mode	CO 5	Understand
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**