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Question Paper Code: AEC023



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MODEL QUESTION PAPER-II

B.Tech VI Semester End Examinations, April - 2020

Regulations: IARE-R16

MICROPROCESSOR INTERFACING AND APPLICATIONS

(Information Technology)

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

Marks

- | | | |
|---|--|------|
| 1 | a) Define a microprocessor. Explain in detail the various bits of a flag register for 8086 microprocessor. | [7M] |
| | b) Calculate the physical address is represented by | [7M] |
| | i) 4370:561EH | |
| | ii) 7A32:0028H | |
| 2 | a) Illustrate the following instructions with an example: PUSH, XCHG, IN, CMP. | [7M] |
| | b) Write an assembly language program to perform division of 00123456 H/6789 H, | [7M] |

UNIT – II

- | | | |
|---|---|------|
| 3 | a) Explain with a neat block diagram the working of 8086 in MIN mode. | [7M] |
| | b) Write an assembly language program to reverse the given string “1, 2, 3, 4, 5, 6”. | [7M] |
| 4 | a) Explain the following pins with respect to 8086 microprocessor. | [7M] |
| | i. ALE | |
| | ii. HOLD | |
| | iii. IO/ M | |
| | iv. DEN | |

- b) Write an assembly language program to find the largest number from an array of 5 numbers. [7M]

UNIT – III

- 5 a) Illustrate the control word register formats of 8255 in I/O and BSR mode. [7M]
- b) Write an assembly language program to generate a triangular waveform. [7M]
- 6 a) List out the types of interrupts in 8086 and explain each with its importance. [7M]
- b) What is interrupt vector table? What are the operations done during handling an interrupt service routine? [7M]

UNIT – IV

- 7 a) Draw and explain the internal architecture of 8251 USART [7M]
- b) Explain about [7M]
- i) Command instruction format
 - ii) Status Read instruction format
- 8 a) Discuss the data transmission standards and their specifications. Compare between synchronous and asynchronous transmission. [7M]
- b) Draw the logic diagram to convert TTL to RS232C conversion and explain the operation briefly. [7M]

UNIT – V

- 9 a) Explain the flag register of 80286 including machine status word. [7M]
- b) Explain the following signal functions of 80386. [7M]
- i) BE0-BE3
 - ii) W/R
 - iii) D/C
 - iv) ADS
 - v) NA
 - vi) BS16
- 10 a) Define virtual memory. Discuss the real modes and virtual modes of 80386. [7M]
- b) Define and explain the following terms [7M]
- i) Descriptor Privilege
 - ii) Selector Privilege
 - iii) Task Privilege



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COURSE OBJECTIVES:

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:

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 8255, 8257 and explain interfacing of I/O device with different modules.
CO 4	Analyze the various synchronous and asynchronous serial data transfer schemes in 8086 and importance of 8251
CO 5	Understand the advanced 16 and 32 bit microprocessors architectures and its features..

COURSE LEARNING OUTCOMES:

AEC023.01	Differentiate between 8085 and 8086 microprocessors architectures and its functionalities.
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.

MAPPING OF SEMESTER END EXAMINATION TO COURSE LEARNING OUTCOMES:

SEE Question No.	CLO Code	Course learning Outcomes	CO code	Blooms Taxonomy Level
1	a	AEC023.03 Describe in detail about functions of general purpose register and 8086 flag register with its functions	CO 1	Understand
	b	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.	CO 1	Understand
2	a	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.	CO 1	Understand
	b	AEC023.05 Understand and apply the fundamentals and procedures and assembler directives of assembly level programming of microprocessors.	CO 1	Understand
3	a	AEC023.07 Describe Minimum mode and maximum mode of operation and timing diagram of 8086 Microprocessor	CO 2	Remember
	b	AEC023.05 Understand and apply the fundamentals and procedures and assembler directives of assembly level programming of microprocessors.	CO 2	Understand
4	a	AEC023.02 Describe the internal Architecture of 8086 microprocessor and explain its functionalities.	CO 2	Understand
	b	AEC023.05 Understand and apply the fundamentals and procedures and assembler directives of assembly level programming of microprocessors.	CO 2	Understand
5	a	AEC023.10 Identify the importance of Various modes of 8255 operation and interfacing to 8086.	CO 3	Remember
	b	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.	CO 3	Understand
6	a	AEC023.12 Explain in detail about the importance of DMA,interrupt and interrupt sub routines in 8086 microprocessor	CO 3	Remember
	b	AEC023.12 Explain in detail about the importance of DMA,interrupt and interrupt sub routines in 8086 microprocessor	CO 3	Understand
7	a	AEC023.14 Develop and design the interfacing circuit diagram of 8251USART with 8086 processor.	CO 4	Understand
	b	AEC023.14 Develop and design the interfacing circuit diagram of 8251USART with 8086 processor.	CO 4	Remember

8	a	AEC023.13	Analyze and understand various synchronous and asynchronous serial data transfer schemes in 8086	CO 4	Understand
	b	AEC023.15	Understand the high- speed serial communications standards, USB.	CO 4	Understand
9	a	AEC023.16	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	AEC023.16	Understand basic architecture of 16 bit and 32 bit Microprocessors with the help of GDT, LDT and multitasking and addressing modes.	CO 5	Understand
10	a	AEC023.17	Flag register 80386: Architecture, register organization, memory access in protected mode	CO 5	Remember
	b	AEC023.17	Flag register 80386: Architecture, register organization, memory access in protected mode	CO 5	Understand

Signature of Course Coordinator

HOD, IT

