2000 IARE

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous) Dundigal, Hyderabad - 500 043

INFORMATION TECHNOLOGY

DEFINITIONS AND TERMINOLOGY

Course Name		MICROPROCESSORS INTERFACING AND APPLICATIONS
Course Code	:	AEC023
Program	:	B.Tech
Semester	:	VI
Branch	:	INFORMATION TECHNOLOGY
Section	÷	А,В
Academic Year	:	2018–2019
Course Faculty	:	Mrs. G Bhavana, Assistant Professor, ECE

OBJECTIVES

Ι	To help students to consider in depth the terminology and nomenclature used in the syllabus.			
II	To focus on the meaning of new words / terminology/nomenclature			

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code			
	UNIT - I							
1	What is a processor?	A processor is an integrated electronic circuit that performs the calculations that run a computer.	understand	CLO1	AEC023.01			
2	What is a combinational circuit?	Combinational circuit is defined as the time independent circuits which do not depends upon previous inputs to generate any output.	understand	CLO1	AEC023.01			
3	What is a sequential circuit?	Sequential circuit depends on clock cycle, present input as well as past inputs to generate any output.	understand	CLO1	AEC023.01			
4	Define the term microprocessor.	A microprocessor may also be called a processor or central processing unit, but it is actually more advanced in terms of architectural design and is built over a silicon microchip.	understand	CLO1	AEC023.01			
4	Define the term RISC.	A reduced instruction set computer is a computer which only reduces the execution time by simplifying the instruction set of the computer.	understand	CLO3	AEC023.03			
5	Define the term CSIC.	A complex instruction set computer is designed to minimize the number of instructions per program ignoring the number of cycles per instruction.	understand	CLO3	AEC023.03			
6	Define Register.	A register is one of a small set of data holding instruction, a storage address, or any kind of sequence of bits.	remember	CLO5	AEC023.05			
7	Define minimum and maximum modes of operation in 8086 microprocessor.	Minimum mode: It means there is only one processor for operating in 8086. Maximum mode: It means that it operates using multi processing mode.	understand	CLO5	AEC023.05			
8	Define physical address in 8086.	These two operations together produce a 20-bit physical address.For example, consider the segment address is 2010H and the offset addressis 3535H.The physical address is calculated as:Segment address when Shifted left by 4 bit positions + offset address=physical address2010H 0010 0000 0001 00000011 0101 0000 00000011 0101 0000 00000011 0101 0011 01010010 0011 0101 0011 01012010H 0010 0000 00000011 0101 0011 01010011 0101 0011 01012010H 0010 0000 0000	remember	CLO5	AEC023.05			

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
9	Define interrupt.	An interrupt is a condition that halts the microprocessor temporarily to work on a different task and then return to its previous task.	understand	CLO7	AEC023.07
10	Define interrupt service routine.	An ISR is a <u>software</u> process invoked by an interrupt request from a <u>hardware</u> device. It handles the request and sends it to the <u>CPU</u> , interrupting the active <u>process</u> .	understand	CLO7	AEC023.07
12	What is an instruction?	Instruction is a command to the microprocessor to perform a specific task.	understand	CLO4	AEC023.04
13	What is clock?	Clock signal is a particular type of signal that oscillates between a high and a low state and it is used to coordinate actions of digital <u>circuits</u> .	understand	CLO5	AEC023.05
14	What is pipeline?	The pipeline enables the processing of each task in parallel rather than waiting for a task to finish and then moving onto another.	understand	CLO5	AEC023.05
15	What is opcode?	An opcode is the first byte of an instruction in machine language which tells the hardware what operation needs to be performed with this instruction.	understand	CLO5	AEC023.05
16	Define segment?	It is basically used to enhance the speed of execution of the computer system, so that processor is able to fetch and execute the data from the memory easily and fast.	remember	CLO8	AEC023.08
17	Define Mnemonics.	Mnemonics is an abbreviation for each binary instruction word.	remember	CLO8	AEC023.08
		UNIT – II			
1	What is machine language?	Computer program instructions and data represented in binary form. In the hierarchy of programming languages, it is the lowest; the computer works directly with it. All high-level languages are translated to machine language by an assembler, compiler, interpreter, or monitor system.	understand	CLO6	AEC023.06
2	What is assembly language program?	An assembly language is a low-level programming language for microprocessors and other programmable devices. Assembly language is also known as assembly code. <u>Assembler computer program</u> is a sequence of instructions that a computer can interpret and execute the program required several hundred lines of code.	remember	CLO6	AEC023.06
3	Define data lines?	As name tells that it is used to transfer data within Microprocessor and Memory/Input or Output devices. It is bidirectional as Microprocessor requires sending or receiving data.	understand	CLO6	AEC023.06
4	Define address lines?	It is a group of wires or lines that are used to transfer the addresses of Memory or I/O devices. It is unidirectional address bus.	understand	CLO6	AEC023.06

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
5	What is an addressing mode?	The term addressing modes refers to the way in which the operand of an instruction is specified.	understand	CLO6	AEC023.06
6	Define timer?	It is a device that counts down from a specified time interval and used to generate a time delay for every machine cycle. A timer uses the frequency of the internal clock, and generates delay.	understand	CLO6	AEC023.06
7	Define counter?	A counter is a device that stores the number of times a particular event or process occurred, with respect to a clock signal. It is used to count the events happening outside the microcontroller.	understand	CLO6	AEC023.06
8	What is serial communication interface (SCI)?	A serial communications interface (SCI) is a device that enables the serial exchange of data between a microprocessor and peripherals such as printers, external drives, scanners, or mice.	understand	CLO9	AEC023.09
9	What is parallel communication transmission?	In parallel transmission, multiple bits are sent simultaneously on different channels within the same cable, or radio path, and synchronized to a clock.	understand	CLO9	AEC023.09
10	Define synchronous data transmission?	The word synchronous refers to things happening at the same time. This means that the transmitting and receiving systems send and receive data at the same rate or speed.	understand	CLO13	AEC023.13
11	Define asynchronous data transmission?	In the case of asynchronous transmission, the data or signals being transmitted and received are not done in synchronization.	understand	CLO13	AEC023.13
12	What is machine cycle?	A machine cycle consists of the steps that a computer's processor executes whenever it receives a machine language instruction. The cycle consists of three standard steps: fetch, decode and execute.	remember	CLO12	AEC023.12
13	Define Stack?	A stack pointer is a small <u>register</u> that stores the address of the last program request in a <u>stack</u> .	understand	CLO12	AEC023.12
14	What is stack structure?	Stack is a linear data structure which follows a particular order in which the operations are performed. The order may be LIFO (Last In First Out) or FILO (First In Last Out).	understand	CLO12	AEC023.12
15	Define flip-flop and latch?	Flip-flops and latches are used as data storage elements. Latch checks input continuously and changes the output whenever there is a change in input. Flip-flop checks input continuously and change the output depending on clock signal but not on input.	understand	CLO13	AEC023.13
		UNIT – III			
1	Define internal memory?	A memory unit is an integral part of any microcomputer, and its primary purpose is to hold instructions and data internally.	understand	CLO8	AEC023.08

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
2	Define external memory?	External memory refers to external hard drives, discs and USB thumb drives.	understand	CLO8	AEC023.08
3	Define Decoding?	Decoding is the process of converting code into plain text or any format that is useful for subsequent processes. It converts encoded data communication transmissions and files to their original states.	understand	CLO8	AEC023.08
4	Define clock skew?	Clock skew is a phenomenon in synchronous digital circuit systems in which the same sourced clock signal arrives at different components at different times i.e. the instantaneous difference between the readings of any two clocks is called their skew.	understand	CLO8	AEC023.08
5	What are clock circuits?	In <u>electronics</u> and especially <u>synchronous</u> <u>digital circuits</u> , a clock signal is a particular type of <u>signal</u> that oscillates between a high and a low state and is used like a <u>metronome</u> to coordinate actions of digital clock <u>circuits</u> .	understand	CLO8	AEC023.08
6	Define logical address?	. Set of all logical addresses generated by CPU in reference to a program is referred as Logical Address Space.	understand	CLO8	AEC023.08
7	Define physical address?	The physical address is a location in a memory unit. Set of all physical addresses mapped to the corresponding logical addresses is referred as Physical Address.	understand	CLO8	AEC023.08
8	What is memory mapping I/O?	Memory-mapped I/O (MMIO) and port-mapped I/O (PMIO) two complementary methods of performing <u>input/output</u> (I/O) between the central processing unit (CPU) and peripheral devices in computer.	understand	CLO8	AEC023.08
9	Define key identification?	An identification key is a printed or computer-aided device that aids the <u>identification</u> scientific and technical fields to identify various kinds of entities.	understand	CLO8	AEC023.08
10	What is 4*4 keyboard matrix?	Typically one port pin is required to read a digital input into the controller. Matrix keypad arrangement is used to reduce the pin count.	understand	CLO11	AEC023.11
12	Define ADC?	Analog-to-digital conversion is an electronic process in which a continuously variable signal is changed, without altering its essential content, into a multi-level (digital) signal.	understand	CLO11	AEC023.11
13	Define DAC?	A digital-to-analog converter (DAC) is a device, usually consisting of a single chip, for converting binary or digital code into an analog signal.	understand	CLO11	AEC023.11
14	Define digit drive pattern?	Digit drive pattern of a seven segment LED display is simply the different logic combinations of its terminals 'a' to 'h' in order to display different digits and characters	remember	CLO11	AEC023.11

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
15	Define look up table?	A lookup table is an array that replaces runtime computation with a simpler array indexing operation.	remember	CLO11	AEC023.11
16	Define LED?	A light-emitting diode (LED) is a semiconductor device that emits visible light when an electric current passes through it.	understand	CLO11	AEC023.11
17	Define LCD?	LCD (liquid crystal display) is the technology used for displays in notebook and other smaller computers.	understand	CLO11	AEC023.11
		UNIT - IV			
1	What is cross talk?	Crosstalk is a disturbance caused by the electric or magnetic fields of one telecommunication signal affecting a signal in an adjacent circuit.	understand	CLO11	AEC023.11
2	Define USART?	8251A is a USART (Universal Synchronous Asynchronous Receiver Transmitter) for serial data communication. Programmable peripheral designed for synchronous/asynchronous serial data communication, packaged in a 28-pin DIP.	understand	CLO14	AEC023.14
3	What is control register?	16-bit register for a control word consist of two independent bytes namely mode word & command word. Mode word: Specifies the general characteristics of operation such as baud, parity, number of bits etc.	understand	CLO14	AEC023.14
4	What is status word register?	Checks the ready status of the peripheral. Status word register provides the information concerning register status and transmission errors.	understand	CLO14	AEC023.14
5	Define program status word?	The Program Status Word or PSW is a collection of data 8 bytes (or 64 bits) long, maintained by the operating system. It keeps track of the current state of the system.	understand	CLO14	AEC023.14
6	What is RS 232?	An RS-232 serial port was once a standard feature of a <u>personal computer</u> , used for connections to <u>modems</u> , <u>printers</u> , <u>mice</u> , data storage, <u>uninterruptible</u> <u>power supplies</u> , and other peripheral devices.	understand	CLO14	AEC023.14
7	Define USB system?	A Universal Serial Bus (USB) is a common interface that enables communication between devices and a host controller such as a personal computer (PC).	understand	CLO14	AEC023.14
8	What is USB cable?	USB cables are designed to ensure correct connections by having different connectors on host and devices, it is possible to connect; two hosts or two devices together.USB requires a shielded cable containing 4 wires.	understand	CLO14	AEC023.14
9	Define USB host?	The USB host communicates with the devices using a USB host controller. The host is responsible for detecting and enumerating devices, managing bus	understand	CLO14	AEC023.14

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
		access, performing error checking, providing and managing power, and exchanging data with the devices.			
10	What are control transfers?	Control transfers are used to configure and retrieve information about the device capabilities.	remember	CLO14	AEC023.14
11	Define PIO 8255?	The parallel input-output port chip 8255 is also called as programmable peripheral input-output port used for higher capability micro programmed processors.	understand	CLO14	AEC023.14
12	What is data bus buffer?	This is a tri state bidirectional buffer used to interface the 8255 to system data bus. Data is transmitted or received by the buffer on execution of input or output instruction by the CPU.	understand	CLO14	AEC023.14
13	What is bit set Reset mode in 8255?	These are two basic modes of operation of 8255. I/O mode and Bit Set-Reset mode (BSR). In I/O mode, the 8255 ports work as programmable I/O ports, while in BSR mode only port C (PC0-PC7) can be used to set or reset its individual port bits.	understand	CLO14	AEC023.14
14	What is BSR mode in 8255?	In this mode any of the 8-bits of port C can be set or reset depending on D0of the control word. The bit to be set or reset is selected by bit select flags D3, D2and D1of the CWR.	understand	CLO14	AEC023.14
		UNIT - V			
1	What is Intel 80286?	The Intel 80286 was a 16-bit <u>microprocessor</u> chip introduced in 1982. The 80286 chip contained a 24-bit <u>address bus</u> , capable of accessing up to 16 <u>MB</u> (megabytes) of <u>RAM</u> (random access memory) and multitasking, the OS.	understand	CLO16	AEC023.16
2	Define segment descriptor?	Segment descriptors are a part of the segmentation unit, used for translating a logical address to a linear address.	understand	CLO16	AEC023.16
3	Define machine status word?	The machine status word consists of four flags used for the LMSW and SMSW instructions which are available in the instruction set of 80286 to write and read the MSW in real address mode.	remember	CLO16	AEC023.16
4	What is protected virtual address mode?	When the 80286 is reset, it always starts its execution in real address mode, where in it performs the initialization of the IP, peripheral, enables interrupts, sets up descriptor tables and then it prepares for entering the protected virtual address mode.	understand	CLO16	AEC023.16
5	What is local and global descriptor?	A descriptor table is an array of 8 KB descriptor. This means there may 8 KB descriptors are in a descriptor table. A Global Descriptor table contains	understand	CLO16	AEC023.16

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
		Global Descriptors common for all the tasks. A Local Descriptor table contains descriptor specific to a particular task.			
6	Define Interrupt Descriptor Table?	Interrupt descriptor table is used to store task gates, interrupt gates and trap gates. The IDT has a 24 bit base address and 16 bit limit register in the CPU.	understand	CLO16	AEC023.16
7	What is privilege?	The privilege mechanism controls the access to descriptors and hence to the corresponding segments of the task.	understand	CLO16	AEC023.16
8	Define descriptor cache?	To allow for fast accesses to segmented memory, the 80286 processor keeps a copy of each segment descriptor in a special descriptor cache. This saves the processor from accessing the <u>GDT</u> for every memory access made.	understand	CLO16	AEC023.16
9	What is GDT?	The Global Descriptor Table or GDT is a data structure used by Intel x86- family processors starting with the 80286 in order to define the characteristics of the various memory areas used during program execution, including the base address, the size and access privileges like execute- ability and write-ability.	understand	CLO16	AEC023.16
10	What is LDT?	There is also a Local Descriptor Table (LDT). While the LDT contains memory segments which are private to a specific program, the GDT contains global segments.	understand	CLO16	AEC023.16
11	What is context switching?	This context switch may be initiated at fixed time intervals (pre-emptive multitasking), or the running program may be coded to signal to the supervisory software when it can be interrupted in multitasking.	remember	CLO16	AEC023.16
12	What is context switching?	This context switch may be initiated at fixed time intervals (pre-emptive multitasking), or the running program may be coded to signal to the supervisory software when it can be interrupted in multitasking.	remember	CLO16	AEC023.16
Signature of the Faculty Signature					re of the HOD