INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

ELECTRONICS AND COMMUNICATION ENGINEERING

ASSIGNMENT QUESTIONS

Course Name	**:**	**MICROPROCESSORS AND MICROCONTROLLERS**
Course Code	**:**	**A60430 (R15)**
Class	**:**	**III B. Tech II Semester**
Branch	**:**	**Electronics and Communication Engineering**
Year	**:**	**2017 – 2018**
Course Coordinator	**:**	**Mrs C Deepthi, Associate Professor, ECE**
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OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

ASSIGNMENT I

UNIT – I
8086 ARCHITECTURE

S.No	Questions	Blooms Taxonomy Level	Course Outcome
1	Define Microprocessor and give the power supply & clock frequency of 8085.	Understand	1
2	List out few applications of microprocessor-based system.	Understand	1
3	State the difference between 8085 & 8086 microprocessor.	Understand	1
4	Discuss about pipelining.	Understand	
5	Explain why 8086 internal architecture is divided into BIU & EU.	Understand	1
6	Describe the flag register of 8086.	Remember	1
7	Discuss how physical address is generated in 8086.	Understand	
8	Evaluate the physical address, if base address is 5200H & offset address is 4510H.	Remember	1
9	Explain the physical memory organization of 8086.	Understand	1
10	Discuss memory segmentation & mention its advantages.	Understand	1
11	Explain the read & write timing diagrams for maximum mode configuration.	Remember	1
12	Describe the interrupts of 8086.	Understand	1
13	The register contents of 8086 are given below. CS = 5000H, DS = 8000H, SS = A000H, ES = B000H, SI = 2000H, DI = 6000H, BP = 1002H, SP = 0002H, AX = 0000H, BX = 5200H, CX = 2000H. Calculate the effective	Remember	1

	Address & physical address of the following instructions. (a) IMUL AX, [BP + BX – 8D] (b) SBB AL, ES:[SI + 5D]		
UNIT – II **INSTRUCTION SET AND ASSEMBLY LANGUAGE PROGRAMMING OF 8086**			
S.No	**Questions**	**Blooms Taxonomy Level**	**Course Outcome**
1	Define addressing mode? Write the names of 8086 addressing modes	Remember	2
2	Explain the instructions formats in 8086.	Understand	2
3	Discuss the following instructions of 8086. a) ADC b) AAS c) IMUL d) CBW	Understand	2
4	Explain ESC, NOP & LOCK instructions of 8086	Understand	2
5	Explain PUSH & POP instructions.	Remember	2
6	List the examples for the following assembler directives. a) ASSUME b) ENDS c) PUBLIC	Remember	2
7	Illustrate the difference between inter segment & intra segment jumps.	Remember	2
8	Write a program to read ASCII code after a strobe signal is sent from a Keyboard.	Remember	2
9	Write a program to add a profit factor to each element in a cost array and puts the result in a prices array.	Remember	2
10	Write an ALP for add a 5-byte number in one array to a 5 byte in another array. Put the sum in another array. Put the state of the carry flag in byte 6 of the array that contains the sum. The first value in each array is the least significant byte of that number.	Remember	2
11	Write a delay loop which produces a delay of 500μsec on an 8086 with 5-MHz clock.	Remember	2
12	Write an ALP to convert a given sixteen bit binary number to its Gray equivalent.	Remember	2
UNIT – III **I/O INTERFACING WITH ADVANCED DEVICES**			
S.No	**Questions**	**Blooms Taxonomy Level**	**Course Outcome**
1	Explain why I/O interface required for 8086.	Understand	3
2	Write how many port lines are present in 8255.	Remember	3
3	Explain BSR mode of operation.	Understand	3
4	Write the control word format for I/O mode.	Remember	3
5	Calculate the control port address of 8255 if the base address is FFF0H.	Remember	3
6	Write BSR control word of 8255 to set pc2 & pc7 & reset them after a time delay. Base address of 8255 is F800H.	Remember	3
7	Discuss how a 4×4 key board matrix is connected to 8255.	Understand	3
8	Explain how a stepper motor is interfaced to 8086.	Understand	3
9	Write a program for 8-bit ADC to sample analog input & store the digital value in memory.	Remember	3
10	Make A Control Words When the Port Of Intel 8255A defined as follows: Port A as an O/P port, mode of the port a is mode-0, port B as an O/P port, mode of the Port B is mode-0.	Understand	3
11	Write an ALP for to interface LED with PORT 0 by using 8255	Remember	3
12	Distinguish between static and dynamic RAM with examples.	Understand	4
13	Explain the purpose of BHE and A0 pins on the 8086 microprocessor.	Understand	4
14	Explain the purpose of CE or CS pin on a memory chip	Remember	4
ASSIGNMENT – II			
15	Distinguish the difference between Maskable and Non-Maskable interrupts.	Understand	4
16	Define DOS interrupts. Give two examples.	Understand	4

17	Interface two 4k×8 EPROMS & and two 4k×8 RAM chips with 8086. Select suitable memory map.	Understand	4
18	Explain about the programmed I/O & interrupt driven I/O.	Understand	4
19	Explain the pin structure of RS232C & also discuss about voltage & current specifications of RS 232C.	Understand	4
20	Write the sequence of events for 8251 initialization with necessary Instructions.	Remember	4
21	Explain a) TXRDY b) DSR c) RTS d) SYNDET/BDT signals.	Understand	4
22	List out the features of 8251(USART).	Remember	6
23	List out the serial communication standards available.	Remember	6
24	Write the methods available for error correction during serial data transmission.	Remember	5
25	Write the specifications of RS232C.	Understand	6
26	Write an ALP for to transfer the data serially	Remember	6
27	Define a) ATN b) EOI c) IFC signals.	Understand	5
28	Describe the frame format of serial asynchronous communication.	Remember	6

UNIT –IV
INTRODUCTION TO 8051 MICROCONTROLLERS

S. No	Questions	Blooms Taxonomy Level	Course Outcome
1	Discuss which ports of 8051 are bit addressable.	Understand	7
2	Explain why does Port 0 need pull-up resistors?	Understand	7
3	Discus about I/O port expansion.	Understand	7
4	Write the significance of TF and TR control bits in the TCON timer/counter control/status register.	Remember	7
5	Write the value of register A after each of the following instructions.	Remember	7
6	Explain the following instructions in 8051 micro controller. a. SETB 86H b. CLR 87H c. SETB 92H	Understand	7
7	Design an 8051 based system with 16 K bytes of program ROM and 16 K bytes of data ROM.	Remember	7
8	Explain briefly the JMP & CALL instructions available in 8051.	Understand	7
9	Write 8051 program to move a block of data from external program memory to external data memory	Remember	7
10	Write a program in 8051 to count number of zero bits available in a byte available in external RAM at 1000h. Store zero bit count in internal RAM location 60H.	Remember	7
11	Write 8051 program to OR the contents of port 1 and port 2, put the result in external RAM location 0102h.	Remember	7

UNIT – V
8051 Real Time Control

S.No	Questions	Blooms Taxonomy Level	Course Outcome
1	Explain the format of TMOD & TCON.	Understand	8
2	Describe the Timer counter logic diagram.	Understand	8
3	List the SFRs needed for serial communication in 8051.	Remember	8
4	Describe how serial port is used for data transfer.	Understand	8
5	List out the functions of SCON register.	Remember	8
6	Write the format of IE register.	Remember	8
7	Discuss in detail the various modes of operation of timers.	Understand	8
8	Write a program to generate a 5 kHz square wave on p1.5. Using timer 0	Remember	8
9	Develop a Program Timer 0 to generate a square wave of 3kHz. Assume that XTAL = 11.0592MHz.	Remember	8
10	Write a program to generate a 5 kHz square wave on P1.5. Using timer 0.	Remember	7

11	Write a program to initialize timer 1 in mode 1.	Remember	7
12	Write a program to transmit 8-bit character serially at 9600 baud rate continuously.	Remember	7

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