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B.E. Seventh Semester (Computer Engineering) (CGS)

10283: Microprocessors and Interfacing: 7 KE 03

P. Pages: 3 Time: Three Hours



AU - 2899

Max. Marks: 80

Notes: 1.

Due credit will be given to neatness and adequate dimensions.

- 2. Assume suitable data wherever necessary.
- 3. Illustrate your answer necessary with the help of neat sketches.
- 4. Use of pen Blue/Black ink/refill only for writing the answer book.
- 1. Describe the function of the following pins and their use in 8086 based system. a)

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i) NMI ii) LOCK

iii) TEST

- iv) RESET.
- b) Calculate the value of each of the physical addresses that follows. Assume all numbers are hexadecimal numbers:

i) 1000 :

ii)

- 1234
- 0100 : ABCD
- iii) A200 :
- 12CF
- iv) B2C0 : FA12
- What are the advantages of segment Registers? c)

OR

What would be the offset required to map to physical address location 002C3₁₆ if the a) contents of the corresponding segment register are 002A₁₆?

b) Explain various flags of the status Register.

Explain the significance of pointer and index register by considering a suitable example. c)

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3. a) Given that

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- (BX) = 637D, (SI) = 2A9 B, displacement = C237 determine the effective address (if applicable) resulting from these registers and the addressing mode: Immediate
- i)

- iii) Register using BX
- iv) Register indirect using BX
- Register relative using BX
- Based Indexed vi)
- vii) Based Indexed relative.
- Two code conversion tables starting with offsets TABL1 and TABL2 in the current data b) segment are to be accessed. Write an instruction sequence that initializes the needed registers and then replaces the contents of memory locations MEM1 and MEM2 (offsets in the current data segment) by the equivalent converted codes from the respective codeconversion table.

OR

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4.	a)	Explain the following instructions with example: i) XCHG	10	
	b)	Write instructions that show two different ways of decrementing the address pointer in SI by two.	3	
5.	a)	What control word must be written into the control register of the 8255 such that Port A is configured for bidirectional operation and Port B is set up with mode 1 outputs.	4	4
	b)	Write a sequence of instructions that inputs the byte of data from input Ports at I/O addresses A000H and B000H adds these values together and saves the sum in memory location IO-SUM.	4	
	c)	Differentiate between I/O mapped I/O and memory mapped I/O.	5	
		OR		
6.		It is necessary to read setting of 12 switches which are connected to the 8255 and display it on LEDs. Draw the setup and write the program for the same. Address of the Ports of 8255 for the connection are as follows Entity Address (Hex) Control Register C6 Port A C0 Port B C2 Port C C4 -Make use of control word by configuring the Ports of an 8255 chip in mode 0, with Port B and Port C _{upper} (PCtr) as inputs and Port A and Port C _{lower} (PCt) as outputs.	13	http://www.sgbauonline
7.	a)	Design the Initialization Control Word (ICW2) for a system to associate type numbers 78H onwards for the interrupt inputs IR ₀ to IR ₇ .	5	•
	b)	Explain with the help of flow chart interrupt processing sequence of 8086 microprocessor.	8	com
OR				
8.	a)	Write instructions to read the current status of the IMR. After that change the masking structure such that only IR_θ is masked.	6	
	b)	Explain with the help of diagram Interrupt Vector Table.	7	7
9.	a)	How many address and data lines are needed for the memory chips with the following organization? i) 256 x 4	6	
	b)	Write a program to initialize 8254 in mode 1 to read and load lower 8-bits only assuming that 8254 is interfaced in memory mapped I/O.	7	

OR

- 10. a) Write a program to initialize 8254 in mode 3 i. c. square rate generator. Load lower 8-bits count first followed by higher 8-bit BCD count in counter 0. Latch the counter and load the count in DX register pair.
- 9
- b) How many address and data lines are needed for the memory chips with the following organization?
- 4

i) 128K x 8

- ii) 1K x 16
- 11. a) Write the initialization routine to program 8251 for asynchronous transmission with 7-data bits, 2-stop bits and odd parity. Select a 16 x clock and program DTR and RTS to be low assuming 82H as the control port address.
 - 7
 - b) Write the command word for using the 8237 DMA with the following requirements:
- 2

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- Memory to peripheral transfer
 - ii) Compressed timing.
 - iii) Rotating priority
 - iv) Late write
 - v) Both DREQ and DACK active high.
- c) Find the addresses of the base address and base count registers for the four channels, when the decoding logic of figure shown below is used.

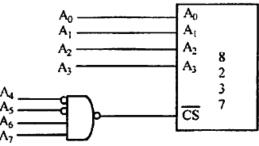


Fig. Address Decoding

OR

12. Write a program to receive 256 bytes of data from system A to system B. Asynchronous reception is to be done using 8251 and RS 232C cable. Draw a suitable interfacing schematic required for the program. Write an assembly language program.
