

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. a) Describe the function of the following pins and their use in 8086 based system. 6
- | | |
|-----------|------------|
| 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. 4
- | | |
|-------------|------|
| i) 1000 : | 1234 |
| ii) 0100 : | ABCD |
| iii) A200 : | 12CF |
| iv) B2C0 : | FA12 |

- c) What are the advantages of segment Registers? 4

OR

2. a) What would be the offset required to map to physical address location $002C3_{16}$ if the contents of the corresponding segment register are $002A_{16}$? 2

- b) Explain various flags of the status Register. 6

- c) Explain the significance of pointer and index register by considering a suitable example. 6

3. a) Given that 7
(BX) = 637D, (SI) = 2A9 B, displacement = C237 determine the effective address (if applicable) resulting from these registers and the addressing mode:

- | | |
|-------------------------------|--------------------------------|
| i) Immediate | ii) Direct |
| iii) Register using BX | iv) Register indirect using BX |
| v) Register relative using BX | vi) Based Indexed |
| vii) Based Indexed relative. | |

- b) Two code conversion tables starting with offsets TABL1 and TABL2 in the current data 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 code-conversion table. 6

OR

- OR

- | <u>Entity</u> | <u>Address (Hex)</u> |
|------------------|----------------------|
| Control Register | C6 |
| Port A | C0 |
| Port B | C2 |
| Port C | C4 |

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

OR

- OR**

10. a) Write a program to initialize 8254 in mode 3 i. e. 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
- i) 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. 5

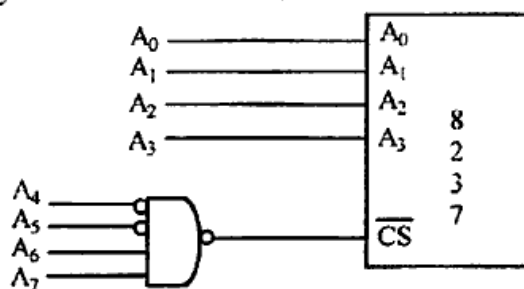


Fig. Address Decoding

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. 14
