

**4E2915**

Roll No. : \_\_\_\_\_

Total Printed Pages : **4****4E2915****B. Tech. (Sem. IV) (Back) Examination, June/July - 2011  
Information Tech.****4IT1 Microprocessor & Interfaces**Time : **3 Hours**[Total Marks : **80**[Min. Passing Marks : **24**

*Attempt overall five questions. All questions carry equal marks.  
(Schematic diagrams must be shown wherever necessary. Any data  
you feel missing suitably be assumed and stated clearly).  
Units of quantities used/calculated must be stated clearly*

Use of following supporting material is permitted during examination.  
(Mentioned in form No. 205)

1. \_\_\_\_\_ Nil \_\_\_\_\_

2. \_\_\_\_\_ Nil \_\_\_\_\_

- 1 (a) Draw a logic schematic to generate four control using  
8085  $\overline{IO/\overline{M}}$ ,  $\overline{RD}$  and  $\overline{WR}$  signals :

(1)  $\overline{MEMR}$ (2)  $\overline{MEMW}$ (3)  $\overline{IOR}$  and(4)  $\overline{IOW}$ 

Explain the functions of these control signals.

**8**

- (b) What do you understand by externally initiated signals and  
interrupts ? How these are used in different programs ?  
Explain.

**8****OR**

- 1 (a) Two machine codes 0011 1110(3EH) and 00110010(32H) are  
stored in memory locations 2000 H and 2001 H, respectively  
as shown below. The first machine code (3EH) represent the  
opcode to load a data byte in the accumulator and second  
code (32H), represents the data byte to be loaded in the  
accumulator. Illustrate the bus timing as these machine  
codes are executed. Calculate the time required to execute the  
opcode fetch and memory read cycles and the entire instruction  
cycle of the clock frequency is 2 MHz.

**4E2915]****1****[Contd...**

Memory location	Machine Code	Instruction		
2000 H	<table border="1"><tr><td>0011</td><td>1110</td></tr></table> → 3EH	0011	1110	MVI A, 32H
0011	1110			
2001 H	<table border="1"><tr><td>0011</td><td>0010</td></tr></table> → 32H	0011	0010	
0011	0010			

- (b) What do you understand by PSW? How it can be used for finding the status of a program. Justify giving suitable example.

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- 2 (a) Specify the register contents and flag status as the following instructions are executed.

SUB A

A	B	S	Z	Cy
XX	XX	X	X	X

MOV B, A

DCR, B

INR, B

SUI, 01 H

HLT.

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- (b) WAP to count continuously in hexadecimal from ff H. to 00H. in a system with a 0.5  $\mu$ sec. clock period. Use register C to set up a one millisecond delay between each count and display the numbers at one of the output ports.

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OR

- 2 (a) Read the following program and answer the question.

2000 : LXI SP, 2100H.      200B CALL 2064 H.

2003 : LXI B, 0000H.      200E OUT 01H.

2006 : PUSH B      2010. HLT.

2007 : POP PSW

2008 LXIH, 200 BH.

Delay : 2064 PUSH H.

2065 PUSH B

2066 LXI B, 80ffH

2069 DCX B

206A MOV A,B.

206B ORA, C

206C JNZ LOOP

206F POP B

2070 RET.

- (a) What is the status of the flags and contents of the accumulator after the execution of the POP instruction located at 2007H?
- (b) Specify the stack locations and their contents after the execution of the CALL instruction (Not the call subroutine).



- (c) What are the contents of the stack pointer register and the program counter after the execution of the CALL instruction ?
- (d) Specify the memory location where the program returns after the subroutine.

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- 3 (a) Interface an 8 bit processor such as 8085 with a  $2K \times 8$  ROM chip and two  $1K \times 8$  RAM chips. Such that, the following address map is realised.

	Device	Size	Address
(i)	ROM Chip	$2K \times 8$	0800.
(ii)	RAM Chip	$1K \times 8$	1000.
(iii)	RAM Chip	$1K \times 8$	4000.

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- (b) What do you understand by Data transfer schemes used in micro-processor based system.
- (i) Interrupt driven data transfer scheme.
- (ii) Synchronous data transfer scheme.

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OR

- 3 (a)

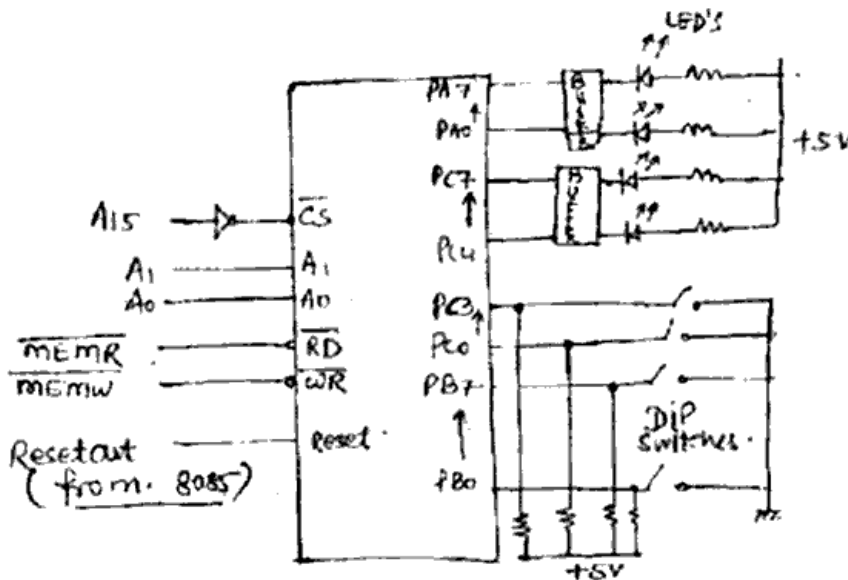


Fig.

- (a) Identify the port address as shown in fig.
- (b) Identify the mode 0 control word to configure port A and port Pcu as output ports and port B and port  $C_L$  as input ports.
- (c) Write a program to read the DIP switches and display the reading from port B at port A and from port  $C_L$  at port  $C_U$ .

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- (b) Draw and explain the pin configuration of 8254.

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- 4 (a) Draw the block diagram of 8259 and explain its functions. 8
- (b) Specify the control word and the command word for data communication having the following specifications :
- (a) Asynchronous mode
  - (b) 1200 baud ( $\overline{TXC} = \overline{RXC} = 76.8 \text{ kHz}$ ).
  - (c) 8 bit character
  - (d) even parity
  - (e) One stop bit.

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OR

- 4 (a) What do you mean by RS-232C ? How it can be used in serial communication ? 8
- (b) Write the short note on :
- (i) Level converters MC - 1488.
  - (ii) MC - 1489

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- 5 (a) What do you mean by minimum and maximum modes of 8086 ? What are two different pins, which makes these configuration different from each other ? 8
- (b) What do you understand by two addressing modes of 8086 ? How these are different from 8085 ? 8

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OR

- 5 Write the short note on any two :
- (i) MMX
  - (ii) Dual core-processor
  - (iii) Pentium processor.

8×2=16

