4E2915

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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 $IO/\overline{M}$, $\overline{RD}$ and $\overline{WR}$ signals :

(1) $\overline{MEMR}$

(2) $\overline{MEMW}$

(3) $\overline{IOR}$ and

(4) 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 excuted. Calculate the time required to excute the opcode fetch and memory read cycles and the entire instruction cycle of the clock frequency is 2 MHz.

Memory location	Machine Code		Instruction
2000 H	0011 1110	→ 3EH	MVI A, 32H
2001 H	0011 0010	→ 32H	

(b) What do you under stand by PSW ? How it can be used for finding the status of a program. Justify giving suitable example. **8**

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

SUB A

A	B	S	Z	Cy
XX	XX	X	X	X

MOV B, A
DCR, B
INR, B
SUI, 01 H
HLT. **8**

(b) WAP to count. continuously in hexadecimal from ff H. to OOH. in a system with a 0.5 μsec. 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. **8**

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    JN2 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.

16

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

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

8

(b) What do you understand by Data transfer schemes used in micro-processor based system.

(i) Interrrupt driven data transfer scheme.

(ii) Sychronuous data transfer scheme.

8

OR

3 (a)

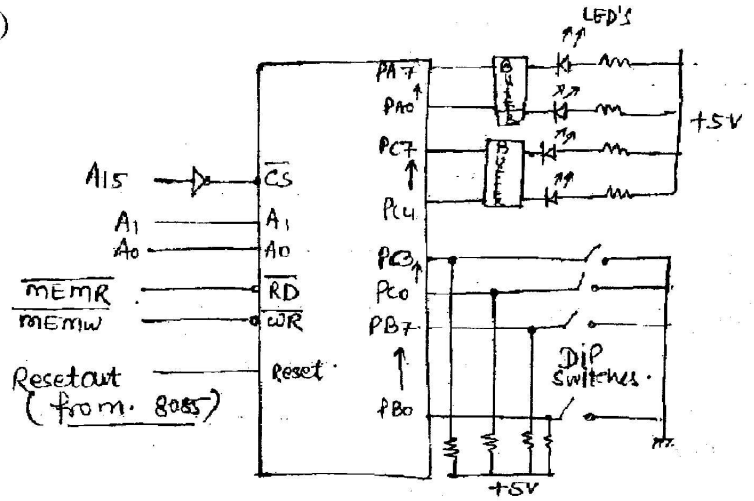

Fig.

(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 form port B at port A and from port C_L at port C_U.

8

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

8

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) Asychronuous mode

(b) 1200 baud $\left(\overline{TXC} = \overline{RXC} = 76.8\,kHz\right)$.

(c) 8 bit character

(d) even parity

(e) One stop bit. **8**

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 **8**

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**

OR

5 Write the short note on any **two** :

(i) MMX

(ii) Dual core-processor

(iii) Pentium processor. **8×2=16**