Subject: MICROPROCESSORS & MICROCONTROLLERS

Time: 3 Hours **Max. Marks: 100**

JUNE 2011

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. American Standard Code for Information Interchange is

(A) 8-bit code **(B)** 7-bit code
(C) 16-bit code **(D)** 10-bit code

b. CMP M instruction of 8085 means

(A) Complement the memory data
(B) Complement the carry flag
(C) Compare memory with accumulator
(D) Compare if minus

c. One of the following address is automatically loaded into PC when the interrupt comes on TRAP is

(A) 003C **(B)** 0024
(C) 0034 **(D)** 002C

d. Which of the following load/retrieve methods best describe a microprocessor stack?

(A) FIFO **(B)** LILO
(C) LIFO **(D)** Buffer

e. Which of the following technique supports fast transfer of blocks of data?

(A) DMA **(B)** NMI
(C) HDL **(D)** FIFO

f. Identify the MODE 0 control word of 8255 to configure port A and port C_U output and port B and port C_L as input port

(A) 83H **(B)** 03H
(C) 80H **(D)** 87H

g. MVI A, 02 H is an example of …….. addressing mode.

(A) Implicit **(B)** Immediate
(C) Direct **(D)** Register

h. If the crystal frequency of 8051 is 12 MHz, the duration of a machine cycle of 8051 is

(A) 0.1 µsec **(B)** 1 µsec
(C) 12 µsec **(D)** 12 Msec

i. In case of 8251, when there is nothing to transmit, the T×D line of 8251 will be at

(A) Logical 1 state **(B)** Logical 0 state
(C) Undefined state **(D)** Tristate

j. In 8253 Timer, the selection of the following pins
A_1=0, A_0=0, RD=0, WR=1, CS=0 means

(A) Read Counter 0 **(B)** Read Counter 1
(C) Write Counter 0 **(D)** Write Counter 1

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Write an assembly language program to move a block of data from one section of memory to another section of memory using 8085 microprocessor. **(8)**

b. Write an assembly language program to find the smallest number from a series of five numbers. **(8)**

Q.3 a. Explain the following addressing modes in 8085 with the help of example **(8)**
(i) Direct (ii) Indirect
(iii) Immediate (iv) Implicit

b. Explain the following instructions with the help of suitable examples.
(i) SUI data (ii) XCHG
(iii) RLC (iv) XRI data **(8)**

Q.4 a. You have given eight 1K×8 EPROM chips and one 74138. Draw a simple diagram showing how the memory chips are assigned to the address range 2000H-3C00H. Please specify the memory ranges for each memory chip. **(8)**

b. Draw and briefly explain the Architecture of 8085.

Q.5 a. Explain MODE 0 and MODE 1 of 8255. **(8)**

b. Draw and explain the block diagram of 8255. **(8)**

Q.6 a. Explain the execution of 8085 when INTR line is high. **(8)**

b. Explain all the vectored Interrupts of 8085. **(8)**

Q.7 a. Describe the functions of important register involved in 8259. **(8)**

b. Write an example to describe the meaning of every bit of Control port of 8257. **(8)**

Q.8 a. Explain the need for Read on the fly operation. Describe its implementation in 8253. **(8)**

b. Describe asynchronous data transmission with a neat diagram. **(8)**

Q.9 a. Explain the various bits available in PSW register of 8051. **(8)**

b. Explain the following addressing modes of 8051(with one example of each).

(i) Immediate (ii) Direct
(iii) Indexed (iv) Implied **(8)**