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ROLL NO. _____

Subject: MICROPROCESSORS & MICROCONTROLLERS

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

DECEMBER 2011

NOTE: There are 9 Questions in all.

- **Please write your Roll No. at the space provided on each page immediately after receiving the Question Paper.**
- **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. $(-51)_{10}$ stored in 8-bit binary form in microprocessor is

(A) 00110100 **(B)** 01001101
(C) 10011010 **(D)** 10110011

b. Which register pair store the address of memory

(A) BC **(B)** DE
(C) HL **(D)** PSW

c. What action is performed after execution of the instruction CC?

(A) Complement Carry **(B)** Call on Carry
(C) Combined Carry **(D)** None of these

d. Which instruction must be executed to correct the result of addition of two BCD numbers?

(A) DAA **(B)** DAS
(C) DAD **(D)** XCHG

e. The instruction used for inputting serial data is called

(A) RIM **(B)** SIM
(C) LXI **(D)** POP

f. Three modes of operation are possible in the following 8255 port.

(A) Port C **(B)** Port B
(C) Port A **(D)** CW

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g. DMA stands for

(A) Data Memory Access **(B)** Direct Memory Access
(C) Dynamic Mode Approach **(D)** None of these

h. The total number of timers inside PIT 8253 is

(A) 1 **(B)** 2
(C) 3 **(D)** 4

i. The pin description of SYNDET/BRKDET in 8251 USART is

(A) Synchronous character detector/break detector
(B) Simple character/break detector
(C) Synthetic detector/binary detector
(D) Simple detector/binary detector

j. To access external memory in 8051 microcontroller the following registers are used.

(A) AB **(B)** PC
(C) Data Pointer **(D)** TCON & TMOD

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

Q.2 a. Give the Programmer's view of 8085 describing the functions of all registers. **(8)**

b. Explain the working of stack and its purpose. **(8)**

Q.3 a. Give the chip select logic diagram to interface two 8 K RAMs and one 16 K EPROM to 8085. Also give the memory map. **(8)**

b. Explain the internal architecture of 8085 with a neat block diagram and explain its working. **(8)**

Q.4 a. Perform block move with overlap by writing an assembly language program. Assume suitable source address. The destination address should start at four addresses later. Add suitable comments. Assume source address starts from 2000H. **(8)**

b. Write an ALP to add and subtract two BCD numbers and store the result in two different addresses. Add suitable comments. **(8)**

Q.5 a. What are hardware and software interrupt of 8085? Also give their addresses. **(8)**

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b. Write the program to evaluate the given Boolean function $Y = AB\overline{C} + A\overline{B}C + \overline{A}BC$ using 8255. **(8)**

Q.6 a. Write the control word for 8255 to work in the following situations.

(i)BSR mode with program to set/reset PC_6.

(ii) Port A in mode2 operation. **(8)**

b. Explain the working of 8279, keyboard/display controller with a neat block diagram. **(8)**

Q.7 a. What are the maximum number of external interrupts that can be connected to 8259 PIC? Give the block diagram of PIC and explain the functions of IRR, ISR & IMR. **(8)**

b. What is DMA controller? Explain with the help of a block diagram the working of a DMA controller. **(8)**

Q.8 a. Explain the process of serial communication using USART 8251 in asynchronous mode. **(8)**

b. Give the pin description of 8253 PIT. **(8)**

Q.9 a. Give the programmer's view of 8051 microcontroller architecture. **(8)**

b. Write a program to multiply and divide two 8 bit number using 8051 microcontroller. Also discuss the status of Flag register in each case. **(8)**

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