ROLL NO. _____

Code: AE66/AC66/AT66 Subject: MICROPROCESSORS & MICROCONTROLLERS

AMIETE – ET/CS/IT

Time: 3 Hours **DECEMBER 2013** **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

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. When numbers(+5) and (-3)represented in 4-bit signed magnitude are added the result is

(A) 1110 **(B)** 0010
(C) 0000 **(D)** 1010

b. When control unit of 8085 processor sends out logic 0 on both $\overline{RD}$ and $\overline{WR}$ pins simultaneously; it means__

(A) 8085control unit is busy with internal processing.
(B) Control unit is not interested in reading/writing any data.
(C) The microprocessor has gone bad and needs to be discarded.
(D) Both **(A)** & **(B)**.

c. Which flag gets affected when result of DAD instruction is more than 16 bits?

(A) P **(B)** Z
(C) CY **(D)** S

d. Which of the following is raising edge triggered interrupt in 8085

(A) RST6.5 **(B)** RST5.5
(C) RST7.5 **(D)** INTR

e. ___ is the non-maskable interrupt in 8086

(A) RST5.5 **(B)** RST7.5
(C) TRAP **(D)** RST6.5

f. In 8051 has three general purpose flags that are user programmable .Out of these one is saved in PSW & other two are saved in

(A) ALU **(B)** Stack pointer
(C) PCON register **(D)** DPTR

g. The value of LSB for 8-bit DAC operating in 0V-10V range is

(A) 5V **(B)** 1V
(C) 39mV **(D)** 0.1V

h. Which of the following is not a feature of 8051 microcontroller

(A) Full duplex serial data transmitter/receiver
(B) Four Register banks
(C) Four 16-bit timer/counters
(D) On chip oscillator Clock circuits

i. When a subroutine is called, the address of the instruction following the CALL instruction is stored in/on the___

(A) Instruction pointer **(B)** Accumulator
(C) Stack **(D)** Program Counter

j. When instruction SUB A is executed the status of Z and CY Flag will be___

(A) CY=1;Z=1 **(B)** CY=0;Z=0
(C) CY=0;Z=1 **(D)** CY=1;Z=0

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

Q.2 a. In a microprocessor, what is the use of a register? What are the advantages & disadvantages of using registers over a memory location?
What is the speciality of register A (accumulator) over other general purpose registers in 8085? **(8)**

b. Explain the pin diagram of 8085 with description. **(8)**

Q.3 a. Explain the instructions using example: **(8)**

(i) PC (ii) CM
(iii) IR (iv) CNC

b. What is the need for input output ports in microcomputer systems? Discuss merits and demerits of input-output mapped with respect to memory mapped input-output in 8085. **(8)**

Q.4 a. Write an assembly language program to multiply two one byte binary numbers stored at locations X and Y. Display the 16 bit result in the address field. **(8)**

b. Write an 8085 assembly language program to find the HCF of two 8 bit numbers. The numbers are stored at location X & Y. Display the numbers in the address field, and their HCF in the data field. **(8)**

Q.5 a. What is the need for masking and interrupt? Discuss SIM and RIM instruction in 8085. **(8)**

b. Explain the mode definition control word of 8255.Configure port A and port B as input port and port C as output port when 8255 is connected as I/O mapped I/O(mode 0). What will be the mode definition control word? **(8)**

Q.6 a. Explain keyboard & display mode set command of 8279. **(8)**

b. Write an 8085 assembly language program to implement a decimal counter using logic controller interface. The starting count should be accepted from interface and displayed on the interface. **(8)**

Q.7 a. Explain the overview of 8259? Discuss various registers available in Intel 8259 –programmable interrupt controller. **(8)**

b. Describe the functionality of following pins available in DMA controller-8257

(i) Reset (ii) $\overline{IOW}$
(iii) HRQ (iv) HLDA
(v)TC (vi) $\overline{MR}$
(vii) ADSTB (viii) AEN **(8)**

Q.8 a. Discuss the interpretation of the bits of the control port of 8253. **(8)**

b. Specify the mode word format required to initialize 8251in desired mode for following conditions:

(i) Asynchronous mode; Baud Rate x 1; 8 bit/character; even parity; one stop bit.
(ii) Synchronous mode; 5 character length, even parity; internal sync detection; Single sync character. **(8)**

Q.9 a. Explain the functional pin diagram of 8051 with a neat diagram. **(8)**

b. Mention exactly what happens (which operation takes place) when following 8051 instruction is executed and identify its addressing mode: **(4)**

(i) ORL A,50H (iii) SUBB A,45H
(ii) ADD A,20H (iv) ANL A @ Ri

c. Mention the various types of instructions available for 8051, with examples. **(4)**