ROLL NO. _____

Code: AC78 Subject: ADVANCED MICROPROCESSORS

AMIETE – CS (NEW SCHEME)

Time: 3 Hours **DECEMBER 2011** **Max. Marks: 100**

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. A certain SRAM has $\overline{CS} = 0$, $\overline{WE} = 0$ and $\overline{OE} = 1$. In which of the following modes this SRAM is operating

(A) Read **(B)** Write
(C) Stand by **(D)** None of the above

b. What will be the contents of register AL after the following has been executed?

```
MOV BL, 8C
MOV AL, 7E
ADD AL, BL
```

(A) 0A and carry flag is set **(B)** 0A and carry flag is reset
(C) 6A and carry flag is set **(D)** 6A and carry flag is reset

c. Ready pin of a microprocessor is used

(A) To indicate that the microprocessor is ready to receive inputs.
(B) To indicate that the microprocessor is ready to receive outputs.
(C) To introduce wait states.
(D) To provide direct memory access.

d. Signal voltage ranges for a logic high and for a logic low in RS-232C standard are

(A) Low = 0 volt to 1.8 volt, high = 2.0 volt to 5 volt
(B) Low = –5 volt to –3 volt, high = +3 volt to +15 volt
(C) Low = +3 volt to +15 volt, high = –3 volt to –15 volt
(D) Low = 2 volt to 5.0 volt, high = 0 volt to 1.8 volt

e. The PCI bus is the important bus found in all the new Pentium systems because

(A) It has plug and play characteristics
(B) It has ability to function with a 64 bit data bus
(C) Any Microprocessor can be interfaced to it with PCI controller or bridge
(D) All of the above

f. Addition of –20 decimal and –18 decimal results

(A) 36H **(B)** 26H
(C) 02H **(D)** None of the above

g. If the crystal oscillator is operating at 15 MHz, the PCLK output of 8284 is

(A) 2.5 MHz **(B)** 5 MHz.
(C) 7.5 MHz. **(D)** 10 MHz.

h. Which type of JMP instruction assembles if the distance is 0020 h bytes?

(A) near **(B)** far
(C) short **(D)** none of the above.

i. By what factor does the 8284A clock generator divide the crystal oscillator's output frequency?

(A) One **(B)** Two
(C) Three **(D)** Four

j. When the 82C55 is reset, its I/O ports are all initializes as

(A) Output port using mode 0. **(B)** Input port using mode 1.
(C) Output port using mode 1. **(D)** Input port using mode 0

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

Q.2 a. Discuss the register organization of 8086. Explain the function of each register. **(8)**

b. Explain with examples data addressing modes available in microprocessors. **(8)**

Q.3 a. Explain following instructions in 8086 family with example and their effect on flag

(i) CWD (ii) IDIV (iii) AAS (iv) SAR
(v) LOOP (vi) SAHF (vii) BOUND (viii) IMUL **(12)**

b. Explain with examples LDS and LES instructions. **(4)**

Q.4 a. Explain with examples conditional jump instructions which perform a jump based on the value of a single flag. What is the change needed in the code to branch anywhere in the segment based on a condition? **(8)**

b. What is an interrupt? Discuss all the five software interrupt instructions. **(8)**

Q.5 a. Explain the Arithmetic group of instructions of 8087. **(6)**

b. Explain the need for an arithmetic co-processor in a microcomputer system. **(5)**

c. Describe the programmer's view of control register and status register of 8087. **(5)**

Q.6 a. Write a Program in assembly language to find the largest of n numbers stored in the memory. **(8)**

b. Discuss the following assembler directives with example:
(i) DWORD
(ii) OFFSET
(iii) SEGMENT
(iv) MACRO **(8)**

Q.7 a. Write an 8086 assembly language program to search for a given 8 bit value using linear search in an array of 8 bit numbers. **(8)**

b. Write an 8086 assembly language program to rename a file, if it exists, using DOS interrupt. Otherwise display on error message. **(8)**

Q.8 a. Write a C program to create a subdirectory if it does not exist, using DOS interrupt. A suitable message should be displayed on CRT depending on the success or failure of the operation. **(8)**

b. Using BIOS routines, write a C program to display a suitable message on CRT in the middle of the screen, after clearing the screen first. **(8)**

Q.9 a. List the salient features of 80286. **(8)**

b. Explain the register organization of 80386. **(8)**