AMIETE – CS (NEW SCHEME) – Code: AC78

Subject: ADVANCED MICROPROCESSORS

Time: 3 Hours

JUNE 2011

Max. Marks: 100

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. Intel 80186 and 80286 microprocessors are

(A) 16-bit   (B) 8-bit
(C) 32-bit   (D) None of the above

b. The 8086 microprocessor can directly address memory up to

(A) 64 Kbytes   (B) 128 Kbytes
(C) 256 Kbytes   (D) None of the above

c. For MOV S instruction, if DF =1, the contents of index register SI and DI are

(A) Automatically decrements   (B) Automatically increments
(C) Both get subtracted   (D) Both get added

d. 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.

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. The 8088 microprocessor has

(A) 16 bit data bus   (B) 4 byte pre-fetch queue
(C) 6 byte pre-fetch queue   (D) 16 bit address bus

g. Pseudo instructions are basically

(A) false instructions.
(B) instructions that are ignored by the microprocessor.
(C) assembler directives.
(D) instructions that are treated like comments.

h. 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

i. Direction flag is used with

(A) String instructions.   **(B)** Stack instructions.
(C) Arithmetic instructions.   **(D)** Branch instructions.

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

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

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

Q.2 a. With a neat diagram explain the architecture of 8086.   **(8)**

      b. Explain with examples the Immediate Addressing, Register Addressing and Direct Addressing modes.   **(5)**

      c. Describe the need for templates in instruction coding of 8086.   **(3)**

Q.3 a. Explain with examples the instructions to perform data transfer between a segment register and a register/memory location.   **(6)**

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

      c. Write an algorithm to perform the equivalent of DAA instruction.   **(6)**

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.   **(6)**

      c. Give examples for Maskable and Non-Maskable interrupts.   **(2)**

Q.5   a.   What is the need for an arithmetic co-processor in a micro-computer system and with a functional pin diagram of 8087, describe the functions of various pins. **(10)**

b.   Write an 8087 program that loads three values for X, Y, and Z, adds them, and store the result. **(6)**

Q.6   a.   What do you understand by assembler directives? What do the following assembler directives do?
(i)   ASSUME   (ii)   SEGMENT
(iii) DB   (iv)   PUBLIC   **(8)**

b.   Write a assembly language program to sort a given set of 8 bit numbers in descending order. **(8)**

Q.7   a.   Compare linear search and binary search in 8086 with the help of example of each. **(8)**

b.   Using BIOS services, write 8086 assembly language program to display memory size in kilo bytes. **(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.   Write a C program to display the attributes of a file using a DOS interrupt. If the file does not exist, display an error message on the screen. **(8)**

Q.9   a.   What is memory paging? Explain how it is used for memory addressing in 80386. **(6)**

b.   Write a short note on the following:

(i)   80286
(ii) 80486   **(10)**