

Code: AC78

Subject: ADVANCED MICROPROCESSORS

AMIETE – CS

Time: 3 Hours

JUNE 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. In Intel's 8086 microprocessor the operating frequency is generated using \_\_\_\_\_.

- (A) an on-chip oscillator (B) IC-8284  
(C) IC - 8282 (D) None of these

b. In Intel's 8086 microprocessor the maximum size of a memory segment is \_\_\_\_\_.

- (A) 64 KBytes (B) 16 KBytes  
(C) 32 KBytes (D) None of these

c. Maximum size of an instruction in Intel's 8086 microprocessor \_\_\_\_\_.

- (A) 4 bytes (B) 0 bytes  
(C) 2 bytes (D) 6 bytes

d. The "D" bit in Status register of Intel's 8086 microprocessor is to \_\_\_\_\_.

- (A) increment/decrement SI and DI pointers  
(B) disable pointers SI and DI  
(C) disable interrupts  
(D) None of these

e. In indirect (variable) IO port addressing of Intel's 8086 microprocessor \_\_\_\_\_ register holds the port address.

- (A) AX register (B) BX register  
(C) CX register (D) DX register

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f. An Assembler is a tool used to convert low level source program into \_\_\_\_\_ program.

- (A) an object (B) high level source  
(C) an executable (D) None of these

g. Intel 80286 microprocessor's address bus is of

- (A) 16 bit (B) 8 bit  
(C) 32 bit (D) 24 bit

h. In Intel's 8086 the 'D' bit in op-code format is to \_\_\_\_\_.

- (A) decide size of source register  
(B) decide size of destination register  
(C) decide REG in 2<sup>nd</sup> byte as source or destination  
(D) None of these

i. In Intel's 8086 an intersegment branching instruction changes the contents of

- (A) CS register only (B) IP register only  
(C) Both CS & IP registers (D) DS register only

j. Pseudo codes or assembler directives find place or appear in

- (A) Source file only (B) Objects file only  
(C) Executable file only (D) All of these

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

**Q.2** a. What are the salient features of INTEL's-8086 microprocessor? Explain with an example how 20 bit physical address is calculated? (10)

b. Mention the I/O addressing modes available in INTEL's-8086. Explain with an example for each. (6)

**Q.3** a. Correct the following instructions if necessary and indicate its addressing mode.  
(i) MOV BL, AX (ii) OUT DX,AL  
(iii) ROL AX, 04 (iv) DIV BX, CX (8)

b. Explain the following instructions of INTEL's-8086.  
(i) STOSB (ii) CMPSB  
(iii) SCASB (iv) MOVSB (8)

**Q.4** a. Explain with examples the inter segment return and intra segment return instructions. (8)

- b. When interrupted by an external interrupt what happens to the program execution in INTEL's-8086? Explain. What is the role of IRET instruction? (8)
- Q.5** a. What are the functions of the following pins of numeric co-processor-8087?  
(i) RQ/GT (ii) BUSY  
(iii) S<sub>2</sub> S<sub>1</sub> S<sub>0</sub> (iv) TEST (8)
- b. Give an example for each of the following 8087 instructions:-  
(i) Arithmetic instruction  
(ii) Data transfer instruction  
(iii) Compare instructions  
(iv) Transcendental instruction (8)
- Q.6** a. Using 8086 instructions, write an assembly language program to add a series of 1 byte numbers. Write necessary comments for the same. (10)
- b. Explain the following assembler directives:  
(i) PTR (ii) PUBLIC  
(iii) SEGMENT (6)
- Q.7** a. Explain DOS operating system services. (6)
- b. Write a 8086 program to check user entry for password. (5)
- c. Explain high level language services for BIOS and DOS services. (5)
- Q.8** a. Write an assembly language program by using 8087 instructions to compute the hypotenuse of a right angled triangle. Comment the code. (8)
- b. Write a C program to print a message, if the printer is online using BIOS and DOS services. Explain the methodology. (8)
- Q.9** a. Explain the following for 80386 processor:-  
(i) Segmentation  
(ii) Paging (8)
- b. Draw the architecture of Pentium processor and explain the features of Pentium processor. (8)