

Code: AC23

Subject: MICROPROCESSOR BASED SYSTEM DESIGN

**AMIETE – CS (OLD 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. What is the Maximum clock frequency in 8086?
- (A) 5 MHz (B) 6 MHz  
(C) 5.6 MHz (D) 6.5 MHz
- 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. What are the various segments registers in 8086?
- (A) Code and Data (B) Data, and Stack Only  
(C) Stack and Extra (D) Both (A) and (C)
- d. 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
- e. A buffer is used to:
- (A) Increase the output current (B) Increase the output voltage  
(C) Decreases the output current (D) None of the above
- f. Which pins are general purpose I/O pins during mode-2 operation of the 82C55?
- (A) PA0 – PA7 (B) PB0-PB7  
(C) PC3-PC7 (D) PC0-PC2

Code: AC23

Subject: MICROPROCESSOR BASED SYSTEM DESIGN

- g. What are the different functional units in 8086 and Execution unit, are the two different functional units in 8086?
- (A) Bus Interface Unit                      (B) Execution unit,  
(C) Memory Unit                              (D) Both (A) and (B)
- 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. Suppose that , if BX=0301, after execution of MOV AL, [BX + 1346H] the AL will have
- (A) The content of 1647                      (B) The content of 0301 + 1346  
(C) The content of 1346 + 0301          (D) The content of 1346
- j. Which Flags can be set or reset by the programmer and also used to control the operation of the processor?
- (A) Trace Flag  
(B) Trace Flag and Interrupt Flag  
(C) Trace Flag, Interrupt Flag, Direction Flag  
(D) Interrupt Flag and Direction Flag

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

- Q.2** a. Differentiate between real and protected modes of an Intel microprocessor. Discuss protected mode memory addressing in brief. (6)
- b. Draw the block diagram of a microprocessor based computer system showing the address, data and control bus structure. (5)
- c. Give a brief description of Intel Pentium IV and Motorola microprocessor 68060. (5)
- Q.3** a. Explain data addressing modes (with examples) available in microprocessors. (10)
- b. What is the use of these assembler directives?  
(i) MACRO                                      (ii) PROC (6)
- Q.4** a. What do you mean by the term procedure? What is the difference between near call and far call? (4)
- b. What is an interrupt? Discuss all the five software interrupt instructions. (6)
- c. Explain a Memory paging technique. (6)

**Code: AC23      Subject: MICROPROCESSOR BASED SYSTEM DESIGN**

- Q.5** a. What is the role of clock generator in microprocessor? Explain the 8284 clock generator and also define the roles of it with 8086. (8)
- b. Write an assembly language program that reads the ASCII numbers from the data segment below converts them to unpacked BCD numbers and stores the result back to the same data segment.
- ```

.....
;from the data segment
ASC_LIST      DB      '35627890'
BCD_LIST      DB      8 DUP(?)
.....

```
- (8)
- Q.6** a. What do you understand by DRAM? How the processor reads and writes data into a DRAM location? How is refreshing of DRAM done? (6)
- b. Compare memory mapped I/O with I/O mapped I/O. (5)
- c. Design an address decoding logic using a 3:8 decoder (74138) to interface a total of 64k memory locations in the address range from F0000 to FFFFF. Divide 64k memory locations in eight blocks of 8 k locations each and generate eight chip select signals. (5)
- Q.7** a. What are the functions of a DMA controller? Explain the various DMA modes. Describe in brief the steps that take place during a DMA write cycle. (8)
- b. What are the different modes in which 8255 Programmable Peripheral Interface (PPI) can operate? (4)
- c. Give a short note on MMX technology. (4)
- Q.8** a. With respect to serial communication define the following:  
 (i) baud rate. (ii) asynchronous communication. (iii) parity  
 (iv) half duplex. (6)
- b. What is the importance of RS232-C in serial communication? Name some applications where you see its use. (4)
- c. Explain how memory management is improved in Pentium processors? (6)
- Q.9** a. What is 16-bit ISA? Compare it with 8-bit ISA bus. (4)
- b. What is EISA bus? Write down its salient features. (6)
- c. What are the differences between CGA and VGA graphics adapters? (6)