

Total number of printed pages – 7

B. Tech  
CPEC 5305

Fifth Semester Examination – 2007

MICROPROCESSOR AND MICRO CONTROLLER

Full Marks – 70

Time : 3 Hours

Answer Question No. 1 which is compulsory  
and any **five** from the rest.

The figures in the right-hand margin  
indicate marks.

1. Answer the following questions : 2×10
- (a) In Intel family of microprocessors, is it possible to have two different instructions for the same machine code ? Why or how ?
- (b) Indicate why each of the following are needed in relation to microprocessor ?

P.T.O.

- (i) Tri-state inverters
- (ii) Assembler Directives.
- (c) What is the difference between the following two instructions ?
- ```
MOV AX, TABLE_ADDR  
LEA AX, TABLE_ADDR
```
- (d) In Intel 8086 microprocessors, why is the segment register content appended by 0 to generate the physical address ?
- (e) What are the default segment registers for SI and DI ?
- (f) What is the main difference between a stack segment and a data segment in Intel processors ?
- (g) What is the purpose of a software model for a microprocessor ?

- (h) List at least two differences between 80286 and 80386 microprocessors.
- (i) What is the size of the stack memory in 8051 and what is the size of the stack pointer register ?
- (j) In which Descriptor table are the following descriptors located ?
- (a) Code- segment
  - (b) Data segment
  - (c) TSS segment
  - (d) LDT segment.
2. (a) Give examples for each of the addressing modes of 8086 processor. 5
- (b) Which of the following are invalid assembly language instructions ? State the error for each invalid instruction. Assume

that all identifiers are variables and are associated with words. 5

MOV BP,AL

MOV WORD\_OP[BX+4\*3][DI],SP

MOV WORD\_OP1,WORD\_OP2

MOV AX,WORD\_OP1[DX]

MOV CS,AX

MOV DS,BP

MOV SAVE\_WORD,DS

3. Write an assembly code to move a string of 16 bytes long from the offset address 0200H to 0300H in the segment 7000H. Discuss on alternate ways of writing this code. 10
4. Suppose DS = 8888H, ES = 2345H, CS=789AH, SS=F123H, BX=1234H, BP=3333H,

SI=F000H. What physical addresses in memory are accessed by the following instructions: 10

MOV AH, [BX+SI+10H]

MOV BH, [BP]

MOV CX, [CS:SI]

5. (a) Write an assembly language program for 8085 microprocessor for getting a delay of 1 second. 5
- (b) Sketch the timing diagram for memory write cycle of the 8085 microprocessor. 5
6. (a) Write an Assembly Language Program for 8051 to find the sum of the values 78H, F5H and E2H. Put the sum in registers R<sub>0</sub>(low byte) and R<sub>5</sub>(high byte). 6

- (b) What kinds of parity are supported on the Pentium processor's bus interface? How are parity errors identified? 4
7. (a) What control word must be written into the control register of the 82C55A such that port A is configured for bidirectional operation and port B is set up with mode 1 outputs? Write a sequence of instructions needed to load the control register of an 82C55A with the above control word. Assume that the control register of the 82C55A resides at address  $0F_{16}$  of the I/O address space. 6
- (b) Starting with the lowest priority to the highest priority, list the interrupt groups in 8086 microprocessor. What are the two elements make up an interrupt vector? 4
8. (a) Make a diagram showing how 2764 EPROMs can be connected to form a 16 K byte program storage memory subsystem. 8
- (b) What the two parts of a DRAM address? 2