

Total number of printed pages – 4 **B. Tech**
CPEC 5305

Sixth Semester Examination – 2008

MICROPROCESSOR AND MICROCONTROLLER

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
 - (i) What dedicated operations are assigned to the CX, BX, AX ?
 - (ii) For which segment register are the contents of the pointer registers used as an offset ?
 - (iii) For which segment register are the contents of the index registers used as an offset ?

- (iv) What is the difference between SI and DI ?
 - (v) Show how the double word 12345678H will be stored in memory starting at address A001.
 - (vi) If the current values in CS and IP are 0200 and 01AC respectively, what is the address of the next instruction ?
 - (vii) What is the purpose of a software model for a microprocessor ?
 - (viii) What must an assembly language programmer know about the registers within the 8086 microprocessor ?
 - (ix) How much memory can be active at a given time in the 8086 microprocessor?
 - (x) What happens to the value in IP each time the 8086 fetches an instruction ?
2. (a) Explain in detail five addressing modes of 8086 with examples. 5
 - (b) Explain with example address generation mechanism of 8086 microprocessor. 5
3. (a) Explain in detail Flag register of 8086 with a neat sketch. 5

P.T.O.

CPEC 5305

2

Contd.

- (b) Differentiate between logical shift and arithmetic shift operation carried out by 8086 instructions, with example. 5
4. (a) Write an 8085 based Assembly Language Program to calculate the square root of a given number and display it if it is a perfect square, if not display an error message. 2
- (b) What is the purpose of DMA mode of data transfer? Provide a Schematic diagram of DMA mode of data transfer. 2
- (c) What are the assembler directives in 8086? Write their uses (any two). 2
- (d) What is wrong with a MOV CS, AX instruction for 8086? 2
- (e) What is the size of the stack pointer in 8051? What is the first RAM location of the stack when the 8051 is powered on? 2
5. (a) Identify the addressing modes used for the source and the destination operands in the following instructions : 7
- (i) MOV AL,BL
- (ii) MOV AX,0FFH

- (iii) MOV [DI],AX
- (iv) MOV DI,[SI]
- (v) MOV [BX]+0400H,CX
- (vi) MOV [DI]+0400H,AH
- (vii) MOV [BX][DI]+0400H,AL

- (b) Given the following sequence of instructions of 8086. What these will cause?
LEA BX,ARRAY
MOV SI,0
MOV AX,[BX][SI] 3
6. (a) Draw architecture of 8051 microcontroller and explain in brief. 5
- (b) Explain in detail memory organization of 8051 microcontroller. 5
7. Write ALP(8086) for the following : 10
- (i) Adding two 16 bit numbers.
- (ii) Multiplying two 16 bit numbers.
8. (a) Explain internal architecture of 8086 microprocessor. 5
- (b) Explain the interrupt facility available in 8085 microprocessor. 5