

**First Semester Special Examination, 2012**  
**MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING**  
**Full Marks: 70**  
**Time: 3 Hours**

Answer six questions including question No.1 which is compulsory  
Figures in the right hand margin indicate marks

1. Answer the following questions: [2 × 10]
- (i) What is the purpose of Demultiplexer and Decoder?
  - (ii) How many memory cells can be addressed by a Microprocessor with 12 address lines?  
Justify your answer.
  - (iii) State the general-purpose registers of the 8085 MPU?
  - (iv) Draw the truth table of 3-input NOR gate.
  - (v) Distinguish between 8237A and 8251A Chips.
  - (vi) State the purposes of min and max mode of 8086 MPU.
  - (vii) Represent  $(-53.33)_{10}$  in its equivalent hexadecimal form.
  - (viii) How many clock cycles are required for execution of the instruction MOV BX, 1234H?
  - (ix) What is buffer? State its use.
  - (x) What is the function of SI and DI registers in 8086?
2. (a) What do you understand by microprocessor? List the operations commonly performed by the microprocessor. 5
- (b) What do you mean by addressing mode? Explain the addressing modes available in the 8085 MPU. 5
3. (a) Differences between I/O mapped I/O and Memory mapped I/O. 3
- (b) Write an assembly language program to convert ASCII code to 8-bit binary. 7
4. (a) Draw the timing diagram for the following instruction with appropriate control and status signal. Explain in brief. 5  
CALL 2000
- (b) List out the maskable and non-maskable interrupts available in 8085MPU. 5
5. (a) Design a microprocessor system to interface an  $8K \times 8$  EPROM and  $8K \times 8$  RAM. 5
- (b) Write the program to count from 0 to 9 with a one second delay between each count. At the count of 9, the counter should reset itself to 0 and repeat the sequence continuously. Use register pair HL to set up the delay, and display each count at one of the output ports. Assume clock frequency of the 8085 microprocessor as 1MHz. 5



6. (a) Write an assembly language program in 8086 to search the largest element in a given array. 5
- (b) Explain the following assembler directive in 8086 3
- (i) ASSUME
  - (ii) EQU
  - (iii) DW
7. (a) What is the purpose of DMA mode of data transfer? Discuss the function of DMA data controller in case of 8257 with a schematic diagram. 5
- (b) What is SIM instruction? Explain the bit pattern of the accumulator for SIM instruction. 5
8. Write short notes on any two: [5 × 2]
- (a) Functional Block Diagram of the 8255A (PPI)
  - (b) Interrupt Controller
  - (c) Functions of 8251A (USART)

