B. CSE 2ND YEAR 2ND SEMESTER EXAMINATION 2018

MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING

Time: Three Hours | Full Marks: 100

Different parts of the same question must be answered ***together***

Answer any one from the following Q1 and Q2:

1. a) Describe the functions of different units of a computer system with the help of a schematic diagram. Write the steps for executing an instruction. In 8085 μP, why is address bus unidirectional and data bus bi-directional? 5+5+(2+3)

   b) Describe the different addressing modes of 8085 μP with examples. 10

2. a) Describe the functions of BIU and EU of the 8086 μP using their schematic diagrams. 10

   b) Describe how program execution speeds up in 8086 μP? 5

   c) If the CS register contains 2050_H and IP register contains $3BA2_H$, what is the physical address of the instruction to be fetched? 5

   d) What are the advantages of segmentation based approach to m/m accessing in 8086 μP. 5

Answer the following Q3:

3. (a) Interface 3K memory as two memory chips (modules) of 2K (M1) and 1K (M2) beginning at address 4000_H using suitable decoders. Explain its address decoding technique and find its RAM address range. Assume/generate appropriate signals and pins. 10+5

   b) What is partial decoding? Explain foldback memory using the data given in Q3. (a). 5+5

Answer any two from the following Q4 – Q6:

4. a) Describe the sequence of steps required for data transfer between microprocessor and an I/O device with appropriate schematic diagram. 10

   b) Write the sequence of steps for DMA operation. 5

   c) Describe a scheme with a schematic diagram to resolve multiple interrupts from two or more peripherals simultaneously through INTR line. 10

5. a) There are N bytes stored from m/m location 2500_H. The value of N is stored in 2400_H. Write an 8085 program (with comments) to interchange the bit D_6 with D_1 (irrespective of their values) of these bytes and store them into the m/m locations starting from 5050_H. 13

   b) Write a program (with comments) to find the sum of odd bytes out of N bytes stored in consecutive locations starting from 2500_H. The value of N is stored in 2200_H. Store the result in locations 2300_H and 2301_H. 12

6. a) N bytes are stored in consecutive m/m location starting from 2050_H. The value of N is stored in $204F_H$. Write an 8085 program to test whether a byte stored in $204E_H$ is present in the list. If present, store its position in the list at $204D_H$; otherwise store FF_H. 13

   b) Write an 8085 program to generate N^{th} fibonacci number and store it in 2050_H. The value of N is stored in memory 2060_H. 12