Fourth Semester B.E. Degree Examination, December 2010
Introduction to Microprocessors

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Explain the architecture of 8085 microprocessor, with a neat block diagram. (10 Marks)
   b. What is the reason for multiplexing address and data lines in 8085 /8086 processors of Intel? With a circuit diagram, explain how the multiplexed address/data signals can be demultiplexed to provide separate address and data signals. (10 Marks)

2 a. Draw the register organization of 8086. Explain the typical applications of each register. (06 Marks)
   b. Discuss 8086 based system configuration in maximum mode, with a neat block diagram. (08 Marks)
   c. State the function of the following signals of 8086.
       i) $\overline{RQ}/\overline{GT}$ ii) $\overline{LOCK}$ iii) OT/$\overline{R}$. (06 Marks)

3 a. Explain the instruction format for MOV instruction. Find out binary code for MOV, AX and SI instructions. (08 Marks)
   b. What are the assembler directives? Explain the following assembler directives. (08 Marks)
       i) DW   ii) DUP   iii) PUBLIC.
   c. Differentiate between 8086 and 8088 microprocessors. (04 Marks)

4 a. Explain the following instructions, with an example.
       i) XLAT   ii) DAA   iii) SCASB   iv) CMPSB   v) CALL addr. (10 Marks)
   b. Write an ALP to check for the presence of a key in a table of entries. If the key is found, place AA in the known memory location. Indicate the absence of the key similarly, by placing BB in the same location. (10 Marks)

5 a. What is addressing mode? Explain the different addressing schemes used in 8086, with examples of each. (10 Marks)
   b. Differentiate between a MACRO and subroutine. Explain how to pass parameters in MACROS, with the help of an example. (10 Marks)

6 a. Explain how a software delay program can be written for 100 ms delay, for a 8086 system, connected with 10 MHz crystal. (06 Marks)
   b. What is the interrupt vector table? Explain how this is used in branching to interrupt service routine. (06 Marks)
   c. Write an APL in 8086 to arrange the ten 8–bit numbers stored in a memory, starting with address ARRAY in ascending order. (08 Marks)

7 a. Explain the operation of 8255 programmable input/input chip (PPI), with a block diagram. (10 Marks)
   b. What are the criteria to be considered before interfacing memory to the processor? Interface 64KB RAM to 8086 operating in minimum mode. (10 Marks)

8 a. Interface a DAC 0800 to 8086 and write a program to generate a triangular waveform. (10 Marks)
   b. Draw and explain a typical stepper motor interface. Further write an ALP to rotate a shaft of a 4-phase stepper motor clockwise by 4 rotations. (10 Marks)

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