Second Semester M.Tech. Degree Examination, June/July 2013
Microprocessors and Microcontrollers

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. Draw the block diagram of microprocessor and explain its functional units. **(06 Marks)**
   b. Consider an example application, and explain how microcontroller is advantageous over microprocessor. **(08 Marks)**
   c. Compare between Von-Neumann architecture and Harvard architecture. **(06 Marks)**

2 a. What is memory segmentation? Explain the use of memory segmentation. **(05 Marks)**
   b. With a neat diagram, explain the functional architecture of 8086 microprocessor. **(10 Marks)**
   c. With an example, show how 20-bit physical address can be generated in 8086 microprocessor. **(05 Marks)**

3 a. What is the significance of directives in assembly language programming? And explain about 'EXTRN' and 'PUBLIC' directives. **(06 Marks)**
   b. List the addressing modes of 8086 microprocessor and explain them with suitable example instructions. **(08 Marks)**
   c. Explain the following instructions: i) XLATB; ii) DAS; iii) LEA. **(06 Marks)**

4 a. Write a note on processor control instructions. **(06 Marks)**
   b. List and discuss the various 8086 string instructions. **(08 Marks)**
   c. Write an assembly language program to show how 'AX' contents are shifted right by four bits. **(06 Marks)**

5 a. Draw 8086 microprocessor interrupt vector table and discuss. **(10 Marks)**
   b. With a neat diagram, explain 82C08 DRAM controller interface with 8086 microprocessor. **(10 Marks)**

6 a. Distinguish between memory mapped I/O and I/O mapped I/O interface. **(08 Marks)**
   b. With a neat schematic diagram, explain interfacing of stepper motor with 8086 microprocessor. Write an assembly language program to make a complete rotation in anti-clock wise direction. **(12 Marks)**

7 a. Compare the features of Z-80, 8051 and PIC microcontrollers. **(06 Marks)**
   b. Explain assembly language programming developments tools used for microcontrollers. **(08 Marks)**
   c. Write a brief note on PIC microcontrollers. **(06 Marks)**

8 a. With a neat diagram, discuss the 8051 functional architecture. **(10 Marks)**
   b. With a neat diagram, discuss 8051 timer/counter logic and explain about TMOD and TCON registers. **(10 Marks)**

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