Registration No. : | | | | | | | | | | |

Total number of printed pages – 3

B. Tech

PCEC 4301

Fifth Semester Back Examination – 2014

MICROPROCESSORS

BRANCH : AEIE, BIOMED, EC, EIE, ETC, IEE

QUESTION CODE : L 217

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

   (a) What determines whether a microprocessor is considered an 8-bit, 16-bit or a 32-bit device ?

   (b) How many address lines does 8086 have ? How many memory addresses does this number of address lines allow the 8086 to access directly ?

   (c) If the code segment for an 8086 program starts at 84300H, what number will be in the CS register ?

   (d) Write the sequence of 8086 instructions in order to load 2450H into the data segment (DS) register.

   (e) If a crystal frequency 14 MHz is attached to the 8284 clock generator, what would be the frequency of CLK and PCLK pins ?

   (f) Assume that AX = 8000H and CL = 03H, after execution of the following sequence of instructions what will be the content of AX register ?
   SAR AX, CL

   (g) What is the wait state ? How they are inserted during an 8086 bus cycle ?

P.T.O.

(h) What is the difference between the following two instructions ?

MOV AX, TABLE_ADDRESS

LEA AX, TABLE_ADDRESS

(i) If the ports A, B and C of 8255 PPI are to be configured for mode-0 operation, where port A and B are the outputs and port C as the input. Find the control word.

(j) What are the different registers available in one channel of the 8237 DMA controller ?

2. Draw the block diagram of 8086 microprocessor mentioning the clear separation between Bus Interface Unit (BIU) and Execution Unit (EU) and explain the major blocks. Explain how the instruction queue speedup the processing in 8086 microprocessor. 10

3. Write an 8086 assembly language program in order to transfer a block of 100_{10} bytes starting from the offset address 1000H to 2000H. You need to use the string related instruction to perform the data transfer. You have to use the STD instruction while writing the program. 10

4. (a) Explain the need of two memory banks while interfacing memory with 8086 microprocessor with the help of neat sketch. Show the data bus connection properly in the diagram. 5

(b) Draw the memory read bus cycle timing diagram in minimum mode with two wait states. 5

5. (a) Explain the different string related instruction of 8086 microprocessor. What technique is used in order to repeat these instructions several number of times ? 5

(b) Explain the register organization of 8086 microprocessor. 5

6. (a) Explain the different operating modes of 8255 PPI in detail. 5

(b) Assume that, LED's are interfaced to port A, SWITCHES are interfaced to port B and SCANNER is interfaced to port C [these examples are specified just to understand the port configuration]. Write the sequence of instructions in order to configure the 8255 PPI. Assume that the port address of control register is 33FFH. 5

7. (a) Explain the different status and control flags of 8086 microprocessor. What are the instructions used in order to : 4 + 1

(i) set carry flag

(ii) reset direction flag

(b) Find the errors in the following 8086 instructions and explain them

(i) MOV AL, SI

(ii) INC [1000H]

(iii) ROL BX, DH

(iv) POP CL

(v) MOV [1200H], [SI+0100H] 5

8. Write short notes on any **two** of the following : 5×2

(a) 8086 assembler directives

(b) Data transfer schemes

(c) Maximum mode of 8086 microprocessor

(d) 8279 keyboard and display controller.