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10EC/TE62

**Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018**  
**Microprocessors**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

**PART – A**

- 1 a. With a neat diagram, explain the BIU of the 8086 microprocessor. (08 Marks)  
b. Explain memory segmentation and advantages of using segment registers. (06 Marks)  
c. Indicate the addressing modes of the destinations operand and calculate its physical address for the following instructions  
i) MOV wordptr [BX + DI + 3456H], 8ACDH  
ii) ADC [BP + 200H], AX  
Assume DS = 4567H, SS = 4000H, BX = 5678H, DI = CDEFH, BP = 69BOH, SP = 64AOH. (06 Marks)
- 2 a. Explain the following machine control instructions :  
i) ESC ii) LOCK prefix iii) WAIT. (06 Marks)  
b. Explain the following directives :  
i) ALIGN ii) ASSUME iii) EXTERN iv) SHORT v) OFFSET. (10 Marks)  
c. Write a program sequence that will reverse the contents of the 4 bytes LIST through LIST+3. (04 Marks)
- 3 a. Explain the following string instructions:  
i) SCASB ii) LODSW iii) CMPSB iv) STOSW (04 Marks)  
b. Write an ALP to convert an ASCII coded decimal number to its binary equivalent. (10 Marks)  
c. Develop an 8086 ALP to compute ' n<sub>c</sub> ' using recursive procedure. Assume ' n ' and ' r ' to be positive integers (n and r <= 8) and place the result in a memory word location. (06 Marks)
- 4 a. Discuss briefly the types of interrupts in 8086. (10 Marks)  
b. Write an interrupt service procedure to read characters from an ASCII keyboard on interrupt basic. (10 Marks)

**PART – B**

- 5 a. Interface 3×4 keyboard to 8086 microprocessor using 8255. Write an ALP with the necessary circuit diagram. (10 Marks)  
b. Discuss briefly the modes of operations of 8255 and the control word format. (10 Marks)
- 6 a. Draw and explain the bit pattern of control register 8087. (07 Marks)  
b. Convert -29.563 to long real form. (03 Marks)  
c. Write an ALP to find mean and standard deviation using 8087 instructions. (10 Marks)
- 7 a. Bring out the differences between minimum mode and maximum mode of 8086. (04 Marks)  
b. Explain the write cycle timing diagram for minimum mode. (06 Marks)  
c. Describe briefly the USB and also give the flowchart used to generate USB data. (10 Marks)
- 8 a. Explain the following with respect to Pentium processor :  
i) Branch prediction logic ii) Cache structure iii) Super scalar architecture. (10 Marks)  
b. Write a short note on :  
i) Special registers of 80386 processor ii) Salient features of 80486 processor. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.