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**Fourth Semester B.E. Degree Examination, Dec.2014/Jan. 2015**  
**Microprocessors**

Time: 3 hrs.

Max. Marks: 100

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

**PART – A**

1. a. Write any four differences between read mode and protected mode memory system. (04 Marks)  
b. Explain real mode memory system of a personal computer system. (06 Marks)  
c. Explain briefly the programming model of 8086 through core – 2 microprocessor. (10 Marks)
2. a. What is paging? Explain the paging mechanism used in 80386 through core – 2 microprocessors. (08 Marks)  
b. Explain with examples, the various data related addressing modes. (08 Marks)  
c. For DS = 1200h, DI = 2024h, ARRAY = 0012h, BX = 1012 h, find the physical address for the following instructions. i) MOV AL, ARRAY [BX] ii) MOV AL, ARRAY [BX] [DI]. (04 Marks)
3. a. Describe the operation of the following instructions with examples :  
i) LEA ii) XLAT iii) DAA iv) IMUL (08 Marks)  
b. Write the machine code for the following instructions :  
i) MOV BP, SP  
ii) MOV WORD PTR [BX + 1000 h], 1234h. (08 Marks)  
c. Explain the following assembler directives, with examples :  
i) EXTRN ii) PTR (04 Marks)
4. a. With format explain rotate instructions. Give examples to rotate right by 2 – bit and rotate left by 4 – bits. (06 Marks)  
b. Explain the following statements to control the flow of the program, with examples :  
i) .IF - .ENDIF  
ii) .REPEAT - .UNTIL  
iii) .WHILE - .ENDW. (06 Marks)  
c. Explain the sequence of operation that takes place during the execution of CALL and RET instructions. Mention the differences between :  
i) near and far procedures  
ii) procedures and macros. (08 Marks)

**PART – B**

5. a. Write an 8086 ALP to find the factorial of a given number using recursive procedures. (06 Marks)  
b. Write a mixed ALP with 'C' to perform a simple calculator operations. (10 Marks)  
c. Write an 8086 ALP to convert the given binary number into its equivalent unpacked decimal and ASCII. (04 Marks)

- 6 a. Explain the following pin functions of 8086 microprocessor :  
 i) READY ii) INTR iii)  $\overline{\text{TEST}}$  iv) NMI. (08 Marks)
- b. With a neat diagram, explain the minimum mode system of 8086 microprocessor. (07 Marks)
- c. Explain the timing diagram of read operation in 8086 microprocessor. (05 Marks)

How 8086 microprocessor selects 8 – bit or 16 – bit data from odd or even memory banks? (04 Marks)

- b. Interface  $8\text{K} \times 8$  ROM and  $4\text{K} \times 8$  RAM to 8086 microprocessor. Assume that the starting address for ROM is 40000 h and that for RAM is 44000 h. (10 Marks)
- c. Mention the differences between memory mapped I/O and Isolated I/O. (06 Marks)

- 8 a. With a neat block diagram, explain 82C55 PPI. Write the control words for  
 i) PORT A input, PORT B output and PORTC output  
 ii) PORT A output, PORT B input, and PORTC input in simple I/O mode. (08 Marks)
- b. With a neat diagram, explain 8254 PIT. (06 Marks)
- c. Explain briefly the interrupt vector table of 8086 microprocessor. (06 Marks)

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