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10CS45

**Fourth Semester B.E. Degree Examination, June/July 2018**  
**Microprocessors**

Time: 3 hrs.

Max. Marks:100

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

**PART - A**

- 1 a. Define microprocessor. Briefly discuss evolution of microprocessors. (06 Marks)
- b. Draw and explain the block diagram of computer system showing address, data and control bus structure. (06 Marks)
- c. Why 8086 memory is divided into segments? Explain the use of Segment, Pointer and Index registers. (08 Marks)
- 2 a. Explain protected mode addressing of 80286 through Core2 64-bit processors. (12 Marks)
- b. Explain with an example, various program memory addressing modes (any 4 addressing modes). (08 Marks)
- 3 a. Explain the coding format of MOV instruction. Also generate opcode for the following instruction :  
MOV WORD PTR [BX + 1000H], 1234H (10 Marks)
- b. Explain the following instructions with an example for each :  
(i) LES (ii) MOVS (iii) XLAT (iv) MUL (v) CBW (05 Marks)
- c. Explain the following assembler directives with an example for each :  
(i) DB (ii) ORG (iii) ASSUME (iv) PROC (v) USES (05 Marks)
- 4 a. Explain the following instructions with example for each :  
(i) DAA (ii) AAS (iii) AAM (iv) WAIT (v) BOUND (10 Marks)
- b. Write an 8086 assembly language program to separate odd and even numbers in an array. (06 Marks)
- c. Write an 8086 assembly language program to read a key from the keyboard and store its hexadecimal value in memory location TEMP (Use IF...ELSE statements). (04 Marks)

**PART - B**

- 5 a. What is an inline assembly? Explain the basic rules of the same for 16-bit DOS applications. (08 Marks)
- b. Differentiate between :  
(i) Assembler and Linker  
(ii) Public and EXTRN  
(iii) Macros and Procedures (06 Marks)
- c. Write an 8086 ALP to find largest of 3 numbers. (06 Marks)
- 6 a. Explain the functions of following pins of 8086 microprocessor :  
(i) READY (ii)  $\overline{\text{BHE}}$  (iii) ALE (iv)  $\text{M}/\overline{\text{IO}}$  (v) NMI (vi) HOLD (06 Marks)
- b. Draw and explain minimum mode memory read machine cycle of 8086. (06 Marks)
- c. With an internal block diagram, explain 8288 bus controller. (08 Marks)



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- 7 a. Briefly explain the following memory devices.  
(i) ROM (ii) PROM (iii) EPROM (iv) EEPROM (v) SRAM (vi) DRAM  
(06 Marks)
- b. Design an interface between 8086 MPU and two chips of  $16k \times 8$  EPROM and two chips of  $32k \times 8$  RAM, Select the starting address of EPROM suitably. (08 Marks)
- c. Differentiate between I/O - mapped - I/O and memory-mapped - I/O. (06 Marks)
- 8 a. Explain different I/O modes of operation of 8255. (06 Marks)
- b. With an internal block diagram, explain 8254 Programmable Interval Timer. (06 Marks)
- c. Explain the structure of 8086 interrupt vector table with a neat diagram. (08 Marks)

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