



**Fourth Semester B.E. Degree Examination, July/August 2021**  
**Microprocessors**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 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 with example the various data related addressing modes of 8086. (08 Marks)
  - b. Explain the various descriptors used in 80286 – core 2 processors operating in protected mode. (06 Marks)
  - c. Generate the machine code for the following 8086 instruction:
    - (i) MOV AX, BX
    - (ii) MOV CL, [SI] (06 Marks)
- 3
  - a. Draw the format of the 16 bit instruction mode. The instruction MOV CL, [SI] stands for “Move the 8 bit contents of memory location indirectly specified by SI to the register CL”. Encode the instruction into machine code using the instruction format. The opcode for MOV operation is 100010<sub>(2)</sub>. (06 Marks)
  - b. Describe the following instructions with examples:
    - i) PUSH            ii) XLAT            iii) XCHG            iv) MUL (08 Marks)
  - c. What are assembler directives? Describe the following assembler directives.
    - i) ASSUME            ii) PROC            iii) ORG (06 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)
- 5
  - a. Differentiate between macros and procedures. (06 Marks)
  - b. Define modular programming. Explain with suitable example. (07 Marks)
  - c. Distinguish between the 16 bit and 32 bit versions of C/C++ when using the assembler. (07 Marks)
- 6
  - a. Draw the pin-out diagram of 8086 in maximum mode and minimum mode and explain the minimum mode pins. (08 Marks)
  - b. With diagram describe how the demultiplexing of address/data done in 8086 microprocessor. (04 Marks)
  - c. Using timing diagram, describe the I/O read bus cycle in 8086  $\mu$ p. (04 Marks)
  - d. Write the difference between 8086  $\mu$ p and 8088  $\mu$ p. (04 Marks)

- 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 16kx8 EPROM and two chips of 32kx8 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 briefly the interrupt vector table of 8086 microprocessor. (10 Marks)
- b. Explain the pin-out of 8255 along with different operational modes. (10 Marks)

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