



CBGS SCHEME

17EC46

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Fourth Semester B.E. Degree Examination, Dec.2025/Jan.2026 Microprocessors

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Why multiplexing technique is used in 8086? Mention its advantages. (05 Marks)
- b. Explain the internal architecture of Intel 8086 with neat block diagram and explain in brief. (10 Marks)
- c. Analyze the effective and physical address if :
 - i. Disp = 1B57H, DS = 2100H
 - ii. DI = 1045H, DS = 2100H
 - iii. BP = 8000H, DS = 5000H, SS = 1000H, Disp = 2345H
 - iv. BX = 0158H, SI = 1045H, DS = 2100H, SS = 1400H
 - v. BP = 0720H, Disp = 1000H, DS = 2000H, SS = 4000H. (05 Marks)

OR

- 2 a. List the need of control word register of Intel 8086. Explain with an example. (08 Marks)
- b. What is addressing modes? Explain any four addressing modes with an example to each. (08 Marks)
- c. Interpret the following instructions : i) SUB and CMP ii) AND and TEST. (04 Marks)

Module-2

- 3 a. Identify the operation of the following instructions :
i) NEG ii) CBW iii) DAA iv) AAD v) SAHF. (05 Marks)
- b. Write ALP to move 16 bytes of string of data from the offset 0200H to 0300H. (10 Marks)
- c. What are assembler directions? Explain the following assembler directions.
i) Model ii) Assume iii) DB iv) DUP v) END. (05 Marks)

OR

- 4 a. Tell the functions of the following instructions with an example :
i) ROL ii) RCR iii) SHL iv) SAR v) ROR. (10 Marks)
- b. Write ALP o convert 8 digits packed BCD number to 16 digits unpacked BCD number. (10 Marks)

Module-3

- 5 a. Explain any four differences between MACRO and PROCEDURE. (04 Marks)
- b. Write an ALP to convert a two digit ASCII number saved in memory into its equivalent binary number with a macro ASC2BIN. (12 Marks)
- c. Explain the working of stack memory of 8086 with an example. (04 Marks)

OR

- 6 a. Write procedure to generate a delay of 20 msec using 8086 processor running at 10 MHz. Show the calculations for the delay. (08 Marks)
- b. Explain the interrupt vector table of 8086 briefly. (04 Marks)
- c. Explain the interrupt acknowledgement cycle of 8086 with a neat diagram. (08 Marks)

Module-4

- 7 a. Sketch the minimum mode operation of 8086 and explain its operation. (10 Marks)
- b. Interface two 4K x 8 EPROM and two 4K x 8 static RAM chips to 8086. Address of ROM at FE000H and RAM at FC000H. (10 Marks)

OR

- 8 a. Explain mode 0 and BSR mode of operation of 8255 PIO device with neat diagram of control register. (10 Marks)
- b. In an 8086 system, 8255 is mapped at IO location con. Read the 4 bit port PC4-7 of the 8255 and output the values to the LED connected on PC0-3. Write the ALP for this along with appropriate setup. (10 Marks)

Module-5

- 9 a. Interface ADC 0808 with 8086 CPU using 8255 ports. Use port A for transferring digital data of ADC to CPU, and port C for control signals. Assume that analog input is present at input-3 of ADC. Draw the schematic and write the required ALP. (10 Marks)
- b. Interface DAC0800 with 8086 CPU using port B of 8255. Write an ALP to generate a triangular waveform of frequency 400Hz. Assume that the system operates at 8MHz and the amplitude of the wave is 5V. (10 Marks)

OR

- 10 a. Write an ALP to read a 2-digit hexadecimal number from keyboard, and display its 4-digit square value on the computer screen, using appropriate DOS function calls. Use assembler directives and comments in your program. (12 Marks)
- b. Write short notes on Von-Neumann architecture and Harvard architecture of computers with neat block diagrams. (08 Marks)

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.

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