

R13

Code No: 126EM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, July - 2023

MICROPROCESSORS AND MICROCONTROLLERS

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

(25 Marks)

- 1.a) List the advantages of memory segmentation. [2]
- b) Describe the implementation of pipelined process of 8086. [3]
- c) Write about string manipulators. [2]
- d) Write a sample program to illustrate the concept of programming the stack. [3]
- e) State the advantages and disadvantages of serial communication. [2]
- f) Find the necessity of handshake signals in mode-2 configurations of 8255. [3]
- g) Give two examples of bit manipulation instructions of 8051. [2]
- h) Describe the 8051 instructions with an example: SWAP and SJMP. [3]
- i) Give the functions of 8051 real time controls. [2]
- j) Compare timers and counters. [3]

PART - B

(50 Marks)

- 2.a) Draw and explain the each bit of flag register of 8086 family microprocessor.
- b) Illustrate the functional description of 8086 microprocessor with a neat sketch. [5+5]

OR

- 3.a) Explain the physical memory organization of 8086 system.
- b) Write briefly about interrupts and its types. Explain the control flow of the microprocessor in detail when interrupt occurs. [5+5]

- 4.a) Explain the all assembler directives of 8086 with suitable examples.
- b) Write detailed note about the following terms: Procedures and Macros. [5+5]

OR

- 5.a) Explain the following instructions: (i) IMUL (ii) ROR.
- b) Write an assembly language program to search data in an array using 8086 instruction set. [5+5]

- 6.a) Discuss how microprocessors are interfaced with I/O and memory in detail.
- b) Draw and explain the serial mode transfer data formats of 8251. [5+5]

OR

- 7.a) Explain briefly the different modes operation of 8255 PPI.
- b) Write in brief about interrupt service routine. [5+5]

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8.a) With the functional block diagram, explain the architecture of 8051 microcontroller.

b) Write a program to add any two 16-bit data using 8051. [5+5]

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OR

9.a) Discuss in detail about the Addressing Modes of 8051 Microcontroller.

b) Explain in detail about Ports of 8051. [5+5]

10.a) How does the timer overflow interrupt differ from real time clocked interrupts?
Discuss in detail.

b) Write a brief note on external hardware interrupts of 8051. [5+5]

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OR

11.a) Explain the timer structures of 8051 with TMOD register.

b) Write a brief note on serial communication interrupts in 8051. [5+5]

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