

- (c) Define what a T-state is and explain how it contributes to an instruction cycle with an example. (6)
6. (a) What are the different registers in 8085 microprocessor? (6)
- (b) Describe the purpose of the CALL and RET instructions. How are they used in subroutine handling? (6)
- (c) What are branch instructions in the 8085 microprocessor? Explain the difference between conditional and unconditional branching with examples. (6)
7. (a) Write an assembly language program to add two 8-bit numbers stored at memory locations 2050H and 2051H, and store the result at 2052H. (6)
- (b) Develop an assembly language program to find the 1's complement of an 8-bit number stored in the accumulator. (6)
- (c) Describe the concept of assembly language programming. How does it differ from high-level programming languages? (6)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 3333

I

Unique Paper Code : 2514000011

Name of the Paper : Fundamentals of 8085
Microprocessor

Name of the Course : B.Sc. (H) Electronics (GE)

Semester : V

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. There are **seven** questions in all, out of which you have to attempt any **five** questions.
3. **All** questions carry equal marks
4. **First** Question is Compulsory.
5. Use of a non-programable scientific calculator is allowed.

1. (a) What is a microcontroller, and how is it different from a microprocessor? (3)
- (b) What is the function of the accumulator? (3)
- (c) Explain the use of the NOP instruction in the 8085. (3)
- (d) What is an addressing mode? Name any three addressing modes used in the 8085 microprocessor. (3)
- (e) What is a stack pointer? (3)
- (f) Explain the concept of an instruction cycle in the 8085 microprocessor. (3)
2. (a) Describe the basic block diagram of a microprocessor system, explaining the function of each main component. (6)
- (b) Perform the following arithmetic operations :
 - (i) Add binary numbers 1011 and 1101.
 - (ii) Subtract hexadecimal numbers 1A from 2F.
 - (iii) Find the 2's complement of the binary number 100110. (6)
- (c) Explain the role of the tri-state logic in microprocessors and how it facilitates data handling within a system. (6)

3. (a) Represent the following signed decimal numbers in 8-bit binary using two's complement : (6)
 - (i) -13
 - (ii) 25
- (b) Discuss how word size, speed, and memory capacity affect the performance of a microprocessor. (6)
- (c) Explain how assembly language interacts with the microprocessor and give an example of a basic assembly language instruction. (6)
4. (a) Why the program counter and the stack pointer are 16 bit registers? (6)
- (b) How many memory locations can be addressed by a microprocessor with 14 address lines? (6)
- (c) What are the externally initiated operation in 8085? (6)
5. (a) Describe the structure of an 8085 instruction cycle. How is it divided into machine cycles and T-states? (6)
- (b) What is the significance of the timing diagram in the operation of the 8085 microprocessor? Illustrate with a simple example. (6)