ROLL NO. _____

Code: AE66/AC66/AT66/AE108/AC108/AT108
Subject: MICROPROCESSORS & MICROCONTROLLERS

AMIETE – ET/CS/IT (Current & New Scheme)

Time: 3 Hours | **June 2019** | **Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. The program counter in 8085 microprocessor is a 16-bit register, because
(A) It counts 16 bits at a time
(B) There are 16 address lines
(C) It facilitates the users storing 16-bit data temporarily
(D) It has to fetch two 8-bit data at a time.

b. If the 8085 adds 87H and 79H, the status of the S, Z, and CY flags will be
(A) S=1, Z=0, CY=1 **(B)** S=0, Z=1, CY=1
(C) S=0, Z=1, CY=0 **(D)** S=1, Z=1, CY=0

c. Consider the program
PUSH PSW
POP H
After the execution of this program:
(A) The L register contains flag register contents
(B) The H register contains flag register contents
(C) The L register contains accumulator contents
(D) None of these

d. Consider the following registers:
1. Accumulator and Temp register
2. B and C register
3. D and E register
4. H and L register

Which of these 8-bit registers of 8085 microprocessor can be paired together to make a 16-bit register?
(A) 1, 3 and 4 **(B)** 2, 3 and 4
(C) 1, 2 and 3 **(D)** 1, 2 and 4

e. Bit Set Reset Mode in 8255 is available for
(A) Port A **(B)** Port B
(C) Port C **(D)** All the Ports

f. Which of the following instruction is not possible in 8085?
(A) POP D **(B)** POP B
(C) POP PSW **(D)** POP 30H

g. How many T-states are required for execution of OUT 80H instruction?
(A) 7 **(B)** 13
(C) 10 **(D)** 15

h. How many modes are possible in 8051 timers?
(A) 4 **(B)** 2
(C) 3 **(D)** 6

i. READY signal in 8085 is useful when the CPU communicates with
(A) a slow peripheral device **(B)** a fast peripheral device
(C) a DMA chip **(D)** a PPI

j. 8051 series has how many 16 bit registers?
(A) 2 **(B)** 3
(C) 1 **(D)** 0

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks

Q.2 a. How can signals be classified for the 8085 microprocessor? Enlist all signals with their classification. **(8)**

b. Write an assembly language program to move data block staring from 2000H to 2010H. Length of data block is 20 bytes. **(8)**

Q.3 a. Write assembly language program for 8085 microprocessor to perform the multiplication of two 8-bit numbers located at memory locations 2000H and 2001H. Store the results at locations starting from 2100H. **(8)**

b. Write assembly language program for 8085 microprocessor to perform the division of two 8-bit numbers located at memory locations 3000H and 3001H. Store the results at locations starting from 3010H. **(8)**

Q.4 Explain the BCD to Seven Segment code conversion technique and write 8085 assembly language program for the same. **(16)**

Q.5 a. Show and explain Mode I of 8255 with waveform. **(10)**

b. Show the control word format of 8255 and explain how each bit is programmed? **(6)**

Q.6 a. With diagram show interfacing of matrix keyboard to 8085. **(8)**

b. What is the role of 8279 peripheral chip, show with example? **(8)**

Q.7 a. List various Registers in 8259, how ICW1 is formed in 8259? **(8)**

b. What are the two major differences between INTR and other interrupts (hardware)? Describe it with appropriate examples. **(8)**

Q.8 a. Describe about direct and indirect addressing modes of 8051 microcontroller with examples. **(8)**

b. Discuss about auto-reload timer mode of 8051 Microcontroller in details. Explain, how make priority of both timers are higher than external interrupts? **(8)**

Q.9 a. Explain in brief about Mode-3 of 8253 with wave form. **(8)**

b. Write a program to perform 16-bit multiplication of Multiplicand and Multiplier located at External memory location 76H, 77H and 78H, 79H respectively. Store result at External memory location 80H, 81H, 82H, 83H. **(8)**