ROLL NO. _____

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

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

Time: 3 Hours **June 2018** **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. In microprocessor 8085, if the result of an executed instruction in accumulator is 0 then which flag is set?
(A) Parity **(B)** Sign
(C) Carry **(D)** Zero

b. How many times the following 'Loop' is executed?

```
        MVI A  02H
Loop :  DCR A
        NOP
        JNZ LOOP
```

(A) 1 **(B)** 2
(C) 3 **(D)** 4

c. In 8085 Microprocessor, which one of the following is used to store the address of the memory?
(A) Accumulator-A **(B)** Register-B
(C) HL Register Pair **(D)** None of these

d. After execution of program shown below, what will be displayed at output port 02H, if data stored at 1010H is 02H?

```
1000H: MVI A, 24H
       LXI H, 1010H
       SUB M
       OUT 02H
       HLT
```

(A) 22H **(B)** 24H
(C) A2H **(D)** 02H

e. How many address lines are available in 8085 Microprocessor?
(A) 8 **(B)** 12
(C) 16 **(D)** 20

f. Which of the following is a microcontroller?
(A) 8255 **(B)** 80286
(C) 8253 **(D)** 8051

g. The instruction CMA in 8085 Microprocessor is _____ Bit instruction.
(A) 8 **(B)** 16
(C) 20 **(D)** 32

h. Which of the following is used to enable interrupt?
(A) RST **(B)** INTA
(C) EI **(D)** TRAP

i. What is the vectored address of interrupt RST 7.5?
(A) 0034H **(B)** 003CH
(C) 0024H **(D)** 002CH

j. What is the content at memory location 2000H for the given instruction set?
LXI H, 2000H
MVI M, 04H
HLT
(A) 00H **(B)** 20H
(C) 04H **(D)** 08H

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

Q.2 a. (i) What is the function of ALE, and S0, S1 pin of 8085 Microprocessor? **(4)**
(ii) Write an ALP to move a 10 byte data from one memory location to another memory location. **(4)**

b. Explain Vectored and non-vectored interrupts of 8085 Microprocessor. **(8)**

Q.3 a. Draw timing diagram for LXI A, F045H. **(8)**

b. Draw a neat block diagram of 8085 Microprocessor and explain. **(8)**

Q.4 a. What do you mean by Addressing Mode of 8085 Microprocessor? Explain various types of addressing modes. **(8)**

b. Explain the following terms: **(2×4)**
(i) Instruction cycle (ii) Assembly language
(iii) Monitor routines (iv) Program Status Word (PSW)

Q.5 a. What is an interrupt? Explain different types of Interrupts used in 8085 microprocessor with suitable diagram. **(8)**

b. Explain RIM & SIM interrupts of 8085 Microprocessor. **(8)**

Q.6 a. What is Programmable Peripheral Interface (PPI) chip? Explain the operational modes of 8255 and its architecture. Also explain control port of 8255. **(8)**

b. Calculate the delay of following routine:

```
MVI B, 10H
LOOP2: MVI C, FFH
LOOP1:  DCR C
JNZ LOOP1
DCR B
JNZ LOOP2
```

Q.7 a. Explain the features and operation of interrupt controller? **(8)**

b. Explain interfacing of 8279 with 8085 Microprocessor. **(8)**

Q.8 a. Define Boolean expression and write down Boolean operators with an example. Also, draw and explain the functional representation diagram of Arithmetic and Logic Unit (ALU). **(8)**

b. What is DMA and how does it work? Explain basic features and explain the pin diagram of 8257. **(8)**

Q.9 a. Discuss operating modes of 8253. Give one example of Mode 3 operation. **(8)**

b. Discuss addressing modes and basic features of 8051. **(8)**