ROLL NO. _____

Code: AE108/AC108/AT108 Subject: MICROPROCESSORS & MICROCONTROLLERS

AMIETE – ET/CS/IT *{NEW SCHEME}*

Time: 3 Hours **DECEMBER 2014** **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. 8085 processor has _____ bit data bus.

(A) 1 bit **(B)** 2 bit
(C) 8 bit **(D)** 16 bit

b. How much memory can 8085 access?

(A) 32 KB **(B)** 64 KB
(C) 128 KB **(D)** 256 KB

c. Which microprocessor pins are used to request and acknowledge a DMA transfer?

(A) Reset & Ready **(B)** Ready & Wait
(C) HOLD & HLDA **(D)** None of these

d. Non-maskable interrupt is _____.

(A) RST 5.5 **(B)** RST 6.5
(C) INTR **(D)** TRAP

e. Give ending address, if starting address of 64K memory is 0000

(A) 8000 **(B)** FFFF
(C) F000 **(D)** B000

f. In instruction MOV M, R, M defines memory location pointed by

(A) DE pair **(B)** BC pair
(C) HL pair **(D)** None of these

g. What is the machine cycle status if S0=1,S1=1,IO/M=0?

(A) Opcode fetch **(B)** Memory read
(C) Memory write **(D)** Reset

h. The 8051 can handle _____ interrupt sources.

(A) 3 **(B)** 4
(C) 5 **(D)** 6

i. MOV A, @ R1 will:

(A) copy R1 to the accumulator
(B) copy the accumulator to R1
(C) copy the contents of memory whose address is in R1 to the accumulator
(D) copy the accumulator to the contents of memory whose address is in R

j. When the 8051 is reset and the $\overline{EA}$ line is HIGH, the program counter points to the first program instruction in the:

(A) internal code memory **(B)** external code memory
(C) internal data memory **(D)** external data memory

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

Q.2 a. Discuss and differentiate between a Microprocessor and a Microcontroller. **(8)**

b. List different system buses of 8085 microprocessor and give function of each bus. **(8)**

Q.3 a. Discuss in detail the isolated I/O mapping and memory mapped I/O devices.**(8)**

b. Let at the program memory location 4080, the instruction MOV B, A (opcode 47H) is stored while the accumulator content is FFH. Illustrate the execution of this instruction by timing diagram. **(8)**

Q.4 a. Write a program in 8085 assembly language to convert BCD to Binary. **(8)**

b. Write a program in 8085 assembly language to multiply two numbers. **(8)**

Q.5 a. Explain RIM ,SIM instructions with suitable illustration. **(8)**

b. Describe the control port of 8255. **(8)**

Q.6 a. Discuss the simulation of a 4-bit ALU. **(8)**

b. Write a program in 8085 assembly language to interface matrix keyboard. **(8)**

Q.7 a. How do the 8259A accomplish the interrupt activity? **(8)**

b. Discuss with a suitable pin diagram, the working of 8257. **(8)**

Q.8 a. Explain asynchronous transmission using 8251. **(8)**

b. Explain the interfacing and programming of 8253 with 8085. **(8)**

Q.9 a. Describe the functional block of 8051 with a neat diagram. **(8)**

b. Explain the following instructions of 8051 with examples: **(8)**
(i) CJNE destination, source, label
(ii) MUL AB
(iii) RR A
(iv) SWAP A