

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

Time: 3 Hours

December - 2017

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)

- Program Counter (PC) in a 8085 microprocessor is a 16-bit register, because
 - it counts 16-bit at a time
 - there are 16 address lines
 - it facilitates the user storing 16-bit data temporarily
 - it has to fetch two 8-bit at a time
- Which of the following is not a vectored interrupt
 - TRAP
 - INTR
 - RST 7.5
 - RST 3
- The sets of command in an assembly program which are not translated into machine instructions during assembly process, are called
 - mnemonics
 - directives
 - identifies
 - operands
- In 8085 microprocessor system with memory mapped I/O, which of the following statement is true?
 - Devices have 8-bit address lines
 - Devices are accessed using IN and OUT instructions
 - There can be maximum of 256 input devices and 256 output devices
 - Arithmetic and logic operations can be directly performed with the I/O data
- All the functions of the ports of 8255 are achieved by programming the bits of an internal register called
 - data bus control
 - read logic control
 - control word register
 - None of these
- The port that is used for the generation of handshake lines in mode 1 or mode 2 is
 - PORT A
 - PORT B
 - PORT C upper
 - PORT C Lower

- g. The contents of the accumulator after this operation
ORG 0000h
MOV A, #0BH
ANL A, #2CH
END
(A) 06H (B) 08H
(C) 12H (D) 18H
- h. In 8085 microprocessor, what are software interrupts?
(A) RST 0-7 (B) RST 5.5-7.5
(C) INTR, TRAP (D) None of these
- i. Address line for TRAP is
(A) 0023h (B) 0024h
(C) 0034h (D) 0033h
- j. The common register(s) for all the four channels of 8257 are
(A) DMA Address Register
(B) terminal Count Register
(C) mode set register and status register
(D) None of these

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

- Q.2** a. What is Microprocessor? Draw the functional block diagram of 8085 microprocessor and explain in detail the functions of each block (8)
- b. What are the most common registers present in 8085? Explain the functions of each registers. (8)
- Q.3** a. What are different addressing modes of 8085 microprocessor? Explain each with suitable instructions. (8)
- b. Write an assembly language program for 8085 microprocessor to sort 10 numbers present from location 2200H onwards in the ascending order. (8)
- Q.4** a. Write an assembly language program for 8085 microprocessor to count number of 1's present in content of D register, store the result in the B register. (6)
- b. Write the programming instructions for 8085 to store 32H at address 4000H. (2)
- c. What is meant by Maskable and Non-Maskable interrupts? Give example of each. Which interrupts are generally used for critical events? (8)

- Q.5a.** What is the difference between microprocessors and microcontrollers? (2)
- b. Let us assume that 8085 microprocessor is running at 2MHz frequency, calculate the delay generated using following instructions. (8)
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|-----------|------------|-------------|
| 1. | MVI B, 10H | 7 T-States |
| 2. LOOP2: | MVI C, FFH | 7 T-States |
| 3. LOOP1: | DCR C | 4 T-States |
| 4. | JNZ LOOP1 | 10 T-States |
| 5. | DCR B | 4 T-States |
| 6. | JNZ LOOP2 | 10 T-States |
- c. Explain the following instructions of 8085 microprocessor with suitable example. (6)
- | | |
|--------------------|---------------|
| (i) ADC R | (ii) DAD D |
| (iii) MVI Rd, data | (iv) ANA R |
| (v) RRC | (vi) JC 2000h |
- Q.6** a. What is 8255 programmable peripheral interface controller? With neat architectural diagram, explain the function and different operational modes of 8255. (10)
- b. Provide a brief overview of the working of 8279 keyboard/display controller chip and draw its functional pin diagram. (6)
- Q.7** a. Explain the features of 8259A Programmable Interrupt Controller. Explain various Initialization command words and operational command words to operate 8259A in various modes. (10)
- b. Explain the function of DMA controller (8257) and list the various features of DMA Controller. (6)
- Q.8** a. Draw neat block diagram of 8253/8254 as programmable interval timer and explain the function of each block in detail. (8)
- b. Write a programming instructions to initialize counter 2 in mode 0 with a count of C030H. Assume address for control register = 0BH, counter 0 = 08H, counter 1 = 09H and counter 2 = 0AH. (8)
- Q.9** a. Explain with neat block diagram, internal memory architecture of 8051 microcontroller (8)
- b. Write an assembly language program for the addition of Five 8-bit numbers. Result should be stored at internal RAM location 30h onwards. (8)