

## AMIETE – ET/CS/IT

Time: 3 Hours

**JUNE 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. The pin that can be used to differentiate between address and data on AD<sub>7-0</sub> in 8085 microprocessor is

- |                        |          |
|------------------------|----------|
| (A) IO/ $\overline{M}$ | (B) ALE  |
| (C) HLDA               | (D) INTR |

b. CALL and RET are used in

- (A) Data transfer instructions
- (B) Arithmetic instructions
- (C) Logical instructions
- (D) Branch control instructions

c. SIM instruction is used to

- (A) Enable RST7.5, RST 6.5 and RST 5.5
- (B) Disable RST7.5, RST 6.5 and RST 5.5
- (C) Enable or disable RST7.5, RST 6.5 and RST 5.5
- (D) None of these

d. When port A is input, Port B and Port C are output, the control word of 8255 is

- |         |         |
|---------|---------|
| (A) 80H | (B) 90H |
| (C) 85H | (D) 86H |

e. Which is the highest priority interrupt?

- |             |             |
|-------------|-------------|
| (A) RST 5.5 | (B) RST 6.5 |
| (C) RST 7.5 | (D) TRAP    |

- f. LXI H, 2500H is an instruction of
- (A) direct addressing mode                      (B) indirect addressing mode  
(C) register addressing mode                      (D) immediate addressing mode
- g. The 8251 operates in
- (A) Synchronous mode  
(B) asynchronous mode  
(C) Synchronous and asynchronous mode  
(D) None of these
- h. 8253 is capable to handle clock frequency at
- (A) 1 MHz    (B) 2 MHz  
(C) 3 MHz    (D) 4 MHz
- i. The number of flags present in 8051 that respond to math operations are.
- (A) 2    (B) 3  
(C) 4    (D) 5
- j. The 8051 microcontroller has
- (A) 4K bytes of on-chip ROM                      (B) 8K bytes of on-chip ROM  
(C) 16K bytes of on-chip ROM                      (D) 32K bytes of on-chip ROM

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

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- Q.2** a. Explain briefly the evolution of microprocessors. (8)
- b. List the various registers of 8085 microprocessor and explain their function. (8)
- Q.3** a. Draw I/O read and write machine cycles. Compare the two machine cycles. (8)
- b. A block of 32 bytes of data is stored at the memory location starting from 8000H. Move this block to the memory location starting from 9000H. (8)
- Q.4** a. Write an assembly language program for addition of two 8-bit decimal numbers and save the result in the memory address 8000H. (8)
- b. Write an 8085 assembly language program to check if the 8-bit number at a location X is a palindrome or not. (8)
- Q.5** a. What do you mean by priority interrupts? Explain the operation of different interrupts available in 8085 with the help of suitable diagram. (8)
- b. What are the different operating modes of 8255? Explain. (8)

- Q.6** a. Draw the interfacing circuit of seven-segment display to the 8085 microprocessor and briefly explain. (8)
- b. Draw a circuit diagram to interface 8279 keyboard with a microprocessor and explain briefly. (8)
- Q.7** a. How many interrupt levels can be handled by 8259. What are the ICWs and OCWs? (8)
- b. Explain the function of following pins of 8257: (8)
- |            |           |                         |
|------------|-----------|-------------------------|
| (i) HRQ    | (ii) HLDA | (iii) $\overline{DACK}$ |
| (iv) READY | (v) AEN   | (vi) ADSTB              |
- Q.8** a. Draw the function block diagram of 8251. Explain the operation of transmission and reception sections of 8251. (8)
- b. Explain the Mode 1 and Mode 2 operation of 8253 with timing diagram. Write the difference between Mode 2 and Mode 3 of 8253. (8)
- Q.9** a. Write the main features of Intel 8051 and explain the data memory structure of 8051. (8)
- b. State different types of instructions of 8051. (8)