

# 17443

16117

**3 Hours / 100 Marks**

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) **Answer any SIX of the following:** **12**
- (i) Draw flag register of 8085.
  - (ii) Write function of SI and SO pins of 8085.
  - (iii) Define immediate addressing mode.
  - (iv) Define machine cycle.
  - (v) List the types of interrupts in 8085.
  - (vi) Draw and state any four features of 8255.
  - (vii) How the port 'C' is divided in group A and group B of 8255?
  - (viii) Which type of memory is available in 8155? State its capacity.

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- b) **Attempt any TWO of the following:** **8**
- (i) Interface 8255 to 8055 in I/o mapped I/o. Write the address of 8255.
  - (ii) Differentiate between 8155 and 8255 (any 8 points)
  - (iii) Interface the ADC to 8085 and write assembly language program to convert analog data to digital data.
2. **Attempt any FOUR of the following:** **16**
- a) With diagram explain the demultiplexing of  $AD_0 - AD_7$  bus in 8085.
  - b) With examples describe any two addressing modes of 8085.
  - c) Write an assembly language program for multiplication of two 8-bit numbers. Store the Result in RAM. Assume RAM locations.
  - d) Differentiate between maskable and non-maskable interrupts. (any 4 points)
  - e) How SOD and SID pins can be used as a single bit output and input ports respectively?
  - f) Draw block diagram of 8355.
3. **Attempt any FOUR of the following:** **16**
- a) Write salient features of 8085. (any eight)
  - b) Draw flowchart and write a program for subtraction of two 16-bit numbers stored in memory. (Assume suitable memory location)
  - c) Draw timing diagram of read machine cycle.
  - d) Describe the function of EI and DI instruction.
  - e) Compare I/o mapped I/o and memory mapped I/o (any eight points)
  - f) Describe DMA controlled data transfer technique.
4. **Attempt any FOUR of the following:** **16**
- a) Draw a neat labelled internal architecture of 8085.
  - b) Define T-state, instruction cycle, machine cycle and timing diagram.
  - c) Explain any four arithmetic instructions by giving examples of each.

- d) Write the priorities of hardware interrupts of 8085 along with their vector addresses.
- e) Interface 8K RAM with 8085. State its memory map.
- f) Draw and explain the control word format of 8255.

**5. Attempt any FOUR of the following: 16**

- a) Draw block diagram of microcomputer and explain.
- b) Define subroutine. Write its advantages.
- c) Write a delay subroutine to generate a delay of 1 msec. Assume clock frequency of 1 MHz. Show calculations.
- d) State the necessity for serial communication in microprocessor based system. Compare serial and parallel communication (2 points)
- e) Write the timer modes of 8155 and explain any one with timing diagram.
- f) Draw block diagram of 8255.

**6. Attempt any FOUR of the following: 16**

- a) Describe the following blocks of 8085:
    - (i) ALU
    - (ii) Timing and control unit.
  - b) Write assembly language program to calculate the sum of 10 numbers stored in RAM. Store the Result in RAM. Assume RAM locations.
  - c) Generate control signals such as memory read, write, I/o read write using decoder.
  - d) Describe the BSR mode of 8255.
  - e) Draw the neat labelled minimum system using 8085, 8155 and 8355?
  - f) Draw SIM instruction format and describe the function of each bit.
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