

Q. P. Code: 08235

(Time: 2  $\frac{1}{2}$  hours)

[Marks: 75]

Please check whether you have got the right question paper.

- N. B.: (1) **All** questions are **compulsory**.  
 (2) Make **suitable assumptions** wherever necessary and **state the assumptions** made.  
 (3) Answers to the **same question** must be **written together**.  
 (4) Numbers to the **right** indicate **marks**.  
 (5) Draw **neat labeled diagrams** wherever **necessary**.  
 (6) Use of **Non-programmable** calculator is **allowed**.

**1. Attempt any three of the following:**

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- Differentiate between higher level and lower level programming language. Also differentiate between machine language and assembly language.
- Draw and explain the block diagram of a computer with microprocessor as CPU.
- Which are the basic four operations performed by the microprocessor? Explain the bus structure of 8085 microprocessor with necessary diagram.
- Illustrate the memory address range of a memory chip with 1K bytes of memory. Explain how range can be changed by modifying the hardware.
- With a neat diagram explain the functional pin configuration of the 40 pin IC8085.
- What is the use of memory segment 8155 in a SDK-85 system? Draw the block diagram of 8155. How is interfacing of 8155 memory section done?

**2. Attempt any three of the following:**

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- Explain the use of OUT instruction. Also explain how the instruction is executed with the help of relevant timing diagram.
- Explain how 8 DIP switches can be interfaced with 8 bit 8085 microprocessor. Draw a neat diagram to show how data and address bus of the microprocessor can be used for interfacing.
- With a neat diagram discuss the programming model of 8085 microprocessor
- Explain one byte, two byte and three byte instructions. Give at least one example for each.
- List different addressing modes used by 8085 microprocessor. Write any one 1 byte and any one 2 byte instruction to perform arithmetic operation using 8085 microprocessor.
- Differentiate between conditional and unconditional jump used in 8085 microprocessor. Explain different conditional jump instructions.

**3. Attempt any three of the following:**

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- A data FF H is stored at a memory location C050 H. Write three different ways of moving this data segment to Accumulator.
- Explain how 8085 microprocessor performs logical operation of comparing two data.

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- c. What is time delay? Why is it needed? Explain how time delay can be generated using a register pair.
- d. Write an 8085 assembly language program to count continuously in hexadecimal from FF H to 00 H (in descending order) in a system with 0.5 $\mu$ s clock period. Use register C to set up 1 ms delay between each count and display the number at one of the output ports.
- e. What is Stack? Explain the use of SP register in 8085. Discuss the instructions PUSH and POP. Write a code to demonstrate use of any one instruction.
- f. Explain the following concepts for subroutine program –
  - i) Nesting
  - ii) Multiple Ending Subroutine

**4. Attempt any three of the following:****15**

- a. Write steps to convert a binary number to BCD. Write a program to convert given 8 bit binary number to BCD
- b. Explain the use of DAA instruction. Also, perform the following operations with given packed BCD numbers –
  - i) 77 + 48
  - ii) 84 - 48
- c. What are utility programs? What is their use in software development systems? Discuss various tools used for developing software assembly language programs.
- d. Write a note on two pass assemblers. Support your explanation with a program, if necessary.
- e. What do you mean by vectored interrupts? Discuss each of 8085 vectored interrupt in brief.
- f. Write a note on DMA.

**5. Attempt any three of the following:****15**

- a. What are the different types of special Pentium registers? Describe them in brief.
- b. With a neat internal block diagram, explain the internal structure of Pentium Pro microprocessor.
- c. Discuss the SYSENTER and SYSEXIT instructions of Pentium II Processor.
- d. Explain Hyper Threading Technology. Draw a neat diagram to indicate how dual core processor is constructed.
- e. Discuss the features of SPARC microprocessor.
- f. What are the basic categories of SPARC instructions? Discuss any two categories.