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: **15**

a. Differentiate between higher level and lower level programming language. Also differentiate between machine language and assembly language.
b. Draw and explain the block diagram of a computer with microprocessor as CPU.
c. Which are the basic four operations performed by the microprocessor? Explain the bus structure of 8085 microprocessor with necessary diagram.
d. Illustrate the memory address range of a memory chip with 1K bytes of memory. Explain how range can be changed by modifying the hardware.
e. With a neat diagram explain the functional pin configuration of the 40 pin IC8085.
f. 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: **15**

a. Explain the use of OUT instruction. Also explain how the instruction is executed with the help of relevant timing diagram.
b. 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.
c. With a neat diagram discuss the programming model of 8085 microprocessor
d. Explain one byte, two byte and three byte instructions. Give at least one example for each.
e. 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.
f. Differentiate between conditional and unconditional jump used in 8085 microprocessor. Explain different conditional jump instructions.

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

a. A data FF H is stored at a memory location C050 H. Write three different ways of moving this data segment to Accumulator.
b. 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 0.5µs 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.
