JHARSUGUDA ENGINEERING SCHOOL

Department of Information technology

SUBJECT – Microprocessor & Microcontroller **SEM** – 4th

Unit-1: 8085 Microprocessor (Architecture and Programming)

Section – I Short Questions (2 Marks)

1. Distinguish between Microprocessor & Microcontroller.
2. What is the purpose of Address Bus, Data Bus & Control Bus?
3. Draw the General Bus Structure Diagram of a Microprocessor and explain it.
4. How many Address lines & Data lines are there in 8085 Microprocessor?
5. Explain the different types of registers available in 8085.
6. What is the purpose of ALE signal in 8085?
7. Distinguish between Special Purpose Registers & General Purpose Register.
8. What bit value will be stored in S and AC flag of 8085 Flag register after adding 5AH with 45H?
9. What is the operating frequency & operating voltage of 8085 microprocessor?
10. Define Maskable & Non Maskable Interrupt of 8085.
11. Explain Flag Register with its bit's representation.
12. What is the purpose S0 & S1 pin in 8085 Microprocessor?
13. What is the purpose of HOLD & HLDA' signal in 8085?

Section – II Long Question (5 Marks or 7 Marks)

1. Describe different signal of 8085 Microprocessor with PIN Diagram.
2. Explain about different types of Interrupt available in 8085 Microprocessor.
3. Explain the Architecture of 8085 Microprocessor with a neat diagram.
4. Describe the Register Organisation of 8085 Microprocessor.
5. Write down the procedure for executing an Instruction with 8085 Microprocessor with architectural diagram.
6. Write about types of interrupt groups and explain each interrupt comes under that group.

Unit-2: Instruction Set and Assembly Language Programming

Section – I Short Questions (2 Marks)

1. Define Instruction and its type.
2. Define Addressing modes and its type for 8085 Microprocessor.
3. What are different types of instruction set available for 8085 Microprocessor?
4. Write down some instruction of arithmetic, logical and branching instruction set.
5. What is addressing mode of LDA 9001H?

Section – II Long Question (5 Marks or 7 Marks)

1. Write an assembly language program to add two 8bit numbers.
2. Write an assembly language program to subtract two 8bit numbers.
3. Write an assembly language program to add two 16bit numbers.
4. Write an assembly language program to subtract two 16bit numbers.
5. Explain different types of Instruction set available in 8085 Microprocessor.
6. Write an assembly Language program to compare two number.
7. Write an assembly language program to perform logical AND operation on two 8bit numbers.
8. Write an assembly language program to perform logical OR operation on two 8bit numbers.
9. Write an assembly language program to find out 1's complement of 8bit number.
10. Describe different types of addressing modes available in 8085 with example.
11. Describe different types of instruction set available in 8085 with Example.
12. Write an assembly language program to find smallest & largest number of an array
13. Write an assembly language program to find maximum and minimum of 10, 8bit numbers

Unit-3: Timing Diagrams

Section – I Short Questions (2 Marks)

1. Define Opcode & Operand.
2. Define Machine cycle, T-State & Instruction Cycle.
3. What is the number of T-State required for STA 4500H?
4. What is the number of T-State required for CALL 2500H?
5. What is the number of T-State required for PUSH & IN 08H?

Section – II Long Question (5 Marks or 7 Marks)

1. Draw the Timing diagram for opcode fetch.
2. Draw the Timing diagram for Memory Read and Memory Write.
3. Draw the Timing diagram for IO Read and IO Write.
4. Draw the Timing diagram for MOV instruction.
5. Explain the T-State and Machine Cycle for STA 4550H with Timing Diagram.
6. Explain the T-State and Machine Cycle for CALL 2000H with Timing Diagram.
7. Draw a neat sketch diagram for LDA 4000H.
8. Draw a neat sketch diagram for IN 08H & PUSH instruction.

Unit-4 Microprocessor Based System Development Aids

Section – I Short Questions (2 Marks)

1. What do you mean by Memory interfacing?
2. Distinguish between IO Mapping & Memory Mapping.
3. How many address lines & data lines available in 256K x 8 RAM?
4. How many address lines & data lines available in 4K x 4 ROM?
5. What is BSR Mode in 8255 ppi with its bit's description?
6. What is Partial address decoding and Full address decoding?
7. What are the modes that are available in IO Mode of 8255 ppi? Write all the modes with bit description.
8. What is the use of NC & COMPENSATION signal in DAC 0808?
9. What is the use of SOC & EOC signal in ADC 0809?
10. How many input & output ports are there in ADC 0809?
11. Describe about seven segment display.
12. What is operating voltage of DAC 0808?
13. What is the use of CS', A1, A0 signal in 8255 ppi?
14. How many ports are available in 8255ppi?
15. What is the size of Memory if 13 address lines available?
16. How many 8kb x 4 chips required to for 32kb memory?

Section – II Long Question (5 Marks or 7 Marks)

1. Explain functionality of 8255 ppi using neat sketch diagram.
2. Consider a system in which the full memory space 64kb is utilized for EPROM memory. Interface the EPROM with 8085 processor.
3. Consider a system in which the available 64kb memory space is equally divided between EPROM and RAM. Interface the EPROM and RAM with 8085 processor.
4. Interface seven segment display with 8085 microprocessors.
5. Write an assembly language program to generate square waves on all lines of 8255.
6. Explain detailed operation of Mode 1 and Mode 2 of 8255 with diagram.
7. Interface two 8k x 8 RAM and two 4k x 8 EEPROM with 8085 microprocessor starting from 1000H for RAM and 4000H for EEPROM using 74LS138 decoder.
8. Interface ADC chips with 8085 processor & write procedure for conversion.
9. Interface DAC chips with 8085 processor & write procedure for conversion.
10. Design interface for stepper motor control for 8255.

Unit-5 8086 Microprocessor (Architecture and Programming-16 bit)

Section – I Short Questions (2 Marks)

1. Distinguish between 8085 & 8086 Microprocessor.
2. How many address lines are available for 8086 microprocessor and what memory size can be interfaced with 8086?
3. What is the clock frequency and operating voltage of 8086?
4. Write down the functional units of 8086.
5. How many control flags are used in 8086 & what are they?
6. Write down the segment registers of 8086.
7. Write down the operating modes of 8086 and its uses.
8. Explain BHE' and TEST signal of 8086.
9. What is Memory Segmentation.
10. What is Interrupt Service Routine (ISR)?
11. Write down Non-Maskable Interrupt of 8086 with example.
12. Which memory bank is enabled when A0 = 0 and BHE' = 1 in 8086?
13. What are the DMA signals used in Maximum mode of 8086?
14. Write down different instruction set of 8086.

Section – II Long Question (5 Marks or 7 Marks)

1. Explain architecture its functional unit of 8086 with neat diagram.
2. Describe the signal description of 8086 microprocessor with PIN Diagram.
3. Describe the maximum and minimum operating modes of 8086.
4. Write down details of 8086 microprocessor addressing modes with example.
5. Write down the procedure for execution of instruction in 8086.
6. Write an assembly language program to add two 16bit numbers using 8086 instruction.
7. Write an assembly language program to subtract two 16bit numbers using 8086 instruction.
8. Explain the interrupt available in 8086 microprocessor.
9. Write down the details of different instruction set available in 8086 microprocessor.
10. Write down the physical memory organisation of 8086 microprocessor.

Unit-6 Microcontroller (Architecture and Programming-8 bit)

Section – I Short Questions (2 Marks)

1. Distinguish between Microprocessor and Microcontroller.
2. Distinguish between RISC & CISC Processor.
3. Write down the PSEN' signal of 8085.
4. Write down the functionality of oscillator in the 8051 architecture
5. What is the default register of 8051 Microcontroller?
6. What is the purpose of PSW register?
7. How many I/O ports are placed in microcontroller 8051?
8. Name the types of 8051 interrupts signals.
9. Mention the operating modes of 8051?
10. State the use of T0 pin of 8051?
11. What is use of EA pin?
12. Define DPTR.
13. How many bits addressable location are placed in internal RAM in 8051?
14. What is the instruction set available in 8051?
15. Which pins are used for serial communication in 8051?

Section – II Long Question (5 Marks or 7 Marks)

1. Explain the Architecture of 8051 with functional block diagram.
2. Explain the Pin Diagram of 8051.
3. Explain the addressing modes of 8051.
4. Explain the register set of 8051.
5. Write down the interrupt of 8051.
6. Explain the details about Timers & Counters of 8051.
7. Describe the details of serial communication in 8051 Microcontroller.
8. Write an assembly language program to add two numbers using 8051 instruction.
9. Write an assembly language program to subtract two using 8051 instruction.
10. Write an Assembly Language for 8051 Microcontroller which copies the data from R0 of Bank0 to R0 of Bank3.
11. Write an Assembly Language for 8051 Microcontroller to compare two numbers.