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19SB405 – MICROPROCESSORS AND ADVANCED MICROCONTROLLERS

2 MARKS QUESTION & ANSWERS

1.What is Microprocessor ?
It is a program controlled semiconductor device (IC}, which fetches, decode and executes instructions.

2. What are the basic units of a microprocessor ?
The basic units or blocks of a microprocessor are ALU, an array of registers and control unit.

3.what is Software and Hardware?
The Software is a set of instructions or commands needed for performing a specific task by a programmable device or a computing machine. The Hardware refers to the components or devices used to form computing machine in which the software can be run and tested Without software the Hardware is an idle machine.

4. What is assembly language?
The language in which the mnemonics (short -hand form of instructions) are used to write a program is called assembly language. The manufacturers of microprocessor give the mnemonics.

5. What are machine language and assembly language programs?
The software developed using 1's and 0's are called machine language, programs. The software developed using mnemonics are called assembly language programs.

6. What is the drawback in machine language and assembly language, programs?
The machine language and assembly language programs are machine dependent. The programs developed using these languages for a particular machine cannot be directly run on another machine .

7. Define bit, byte and word.
A digit of the binary number or code is called bit. Also, the bit is the fundamental storage unit of computer memory. The 8-bit (8-digit) binary number or code is called byte and 16-bit binary number or code is called word. (Some microprocessor manufactures refer the basic data size operated by the processor as word).

8. What is a bus?

Bus is a group of conducting lines that carries data, address and control signals.

9. Why data bus is bi-directional?

The microprocessor has to fetch (read) the data from memory or input device for processing and after processing, it has to store (write) the data to memory or output device. Hence the data bus is bi-directional.

10. Why address bus is unidirectional?

The address is an identification number used by the microprocessor to identify or access a memory location or I / O device. It is an output signal from the processor. Hence the address bus is unidirectional.

11. What is the function of microprocessor in a system?

The microprocessor is the master in the system, which controls all the activity of the system. It issues address and control signals and fetches the instruction and data from memory. Then it executes the instruction to take appropriate action.

12. What are the modes in which 8086 can operate?

The 8086 can operate in two modes and they are minimum (or uniprocessor) mode and maximum (or multiprocessor) mode.

13. What is the data and address size in 8086?

The 8086 can operate on either 8-bit or 16-bit data. The 8086 uses 20bit address to access memory and 16-bit address to access 1/0 devices.

14. Explain the function of M/IO in 8086.

The signal M/IO is used to differentiate memory address and 1/0 address When the processor is accessing memory locations MI 10 is asserted high and when it is accessing 1/0 mapped devices it is asserted low.

15. Write the flags of 8086.

The 8086 has nine flags and they are

1. Carry Flag (CF) 6. Overflow Flag (OF)   2. Parity Flag (PF) 7. Trace Flag (TF)
3. Auxiliary carry Flag (AF) 8. Interrupt Flag (IF)   4. Zero Flag (ZF) 9. Direction Flag (DF)
5. Sign Flag (SF)

16. What are the interrupts of 8086?

The interrupts of 8085 are INTR and NMI. The INTR is general maskable interrupt and NMI is non-maskable interrupt.

17. How clock signal is generated in 8086? What is the maximum internal
clock frequency of 8086?
The 8086 does not have on-chip clock generation circuit. Hence the clock generator chip, 8284 is connected to the CLK pin of8086. The clock signal supplied by 8284 is divided by three for internal use. The maximum internal clock frequency of8086 is 5MHz.

18. Write the special functions carried by the general purpose registers of
8086.
The special functions carried by the registers of 8086 are the following.
Register Special function
1. AX 16-bit Accumulator
2. AL 8-bit Accumulator
3. BX Base Register
4. CX Count Register
5. DX .Data Register

19. What is pipelined architecture?
In pipelined architecture the processor will have number of functional units and the execution time of functional units are overlapped. Each functional unit works independently most of the time.

20. What are the functional units available in 8086 architecture?
The bus interface unit and execution unit are the two functional units Downloaded from www.Rejinpaul.com Get Unique study materials from www.rejinpaul.comavailable in 8086 architecture.

21. List the segment registers of 8086.
The segment registers of 8086 are Code segment, Data segment, Stack segment and Extra segment registers.

22. Define machine cycle.
Machine cycle is defined as the time required to complete one operation of accessing memory, I/O, or acknowledging an external request. This cycle may consist of three to six T-states.

23. Define T-State.
T-State is defined as one subdivision of the operation performed in one clock period. These subdivisions are internal states synchronized with the system clock, and each T-State is precisely equal to one clock period.

24. List the components of microprocessor (single board microcomputer)based system
The microprocessor based system consist of microprocessor as CPU, semiconductor memories like EPROM and RAM, input device, output device and interfacing devices.

25. Why interfacing is needed for 1/0 devices?

Generally I/O devices are slow devices. Therefore the speed of I/O devices does not match with the speed of microprocessor. And so an interface is provided between system bus and I/O devices.

26. What is the difference between CPU bus and system bus?

The CPU bus has multiplexed lines but the system bus has separate lines for each signal. (The multiplexed CPU lines are demultiplexed by the CPU interface circuit to form system bus).

27..What does memory-mapping mean?

The memory mapping is the process of interfacing memories to microprocessor and allocating addresses to each memory locations.

28..What is interrupt 1/0?

If the 1/0 device initiate the data transfer through interrupt then the 1/0 is called interrupt driven 1/0.

29. Why EPROM is mapped at the beginning of memory space in 8085 system?

In 8085 microprocessor, after a reset, the program counter will have OOOOH address. If the monitor program is stored from this address then after a reset, it will be executed automatically. The monitor program is a permanent program and stored in EPROM memory. If EPROM memory is mapped at the beginning of memory space, i.e., at OOOOH, then the monitor program will be executed automatically after a reset.

30. What is the need for system clock and how it is generated in 8085?

The system clock is necessary for synchronizing various internal operations or devices in the microprocessor and to synchronize the microprocessor with other peripherals in the system.

31.What is DMA?

The direct data transfer between I/O device and memory is called DMA.

32. What is the need for Port?

The I/O devices are generally slow devices and their timing characteristics do not match with processor timings. Hence the I/O devices are connected to system bus through the ports.

33.What is a port?

The port is a buffered I/O, which is used to hold the data transmitted from the microprocessor to I/O device or vice-versa.

34.Give some examples of port devices used in 8085 microprocessor based system?

The various INTEL I/O port devices used in 8085 microprocessor based system are 8212, 8155, 8156, 8255, 8355 and 8755.

35. Write a short note on INTEL 8255?

The INTEL 8255 is a I/O port device consisting of 3 numbers of 8 –bit parallel I/O ports. The ports can be programmed to function either as a input port or as a output port in different operating modes. It requires 4 internal addresses and has one logic LOW chip select pin.

36.What is the drawback in memory mapped I/0?
When I/O devices are memory mapped, some of the addresses are allotted to I/O devices and so the full address space cannot be used for addressing memory (i.e., physical memory address space will be reduced). Hence memory mapping is useful only for small systems, where the memory requirement is less.

37. How DMA is initiated?
When the I/O device needs a DMA transfer, it will send a DMA request signal to DMA controller. The DMA controller in turn sends a HOLD request to the processor. When the processor receives a HOLD request, it will drive its tri-stated pins to high impedance state at the end of current instruction execution and send an acknowledge signal to DMA controller. Now the DMA controller will perform DMA transfer.

38. What is processor cycle (Machine cycle)?
The processor cycle or machine cycle is the basic operation performed by the processor. To execute an instruction, the processor will run one or more machine cycles in a particular order.

39. What is Instruction cycle?
The sequence of operations that a processor has to carry out while executing the instruction is called Instruction cycle. Each instruction cycle of a processor indium consists of a number of machine cycles.

40. What is fetch and execute cycle?
In general, the instruction cycle of an instruction can be divided into fetch and execute cycles. The fetch cycle is executed to fetch the opcode from memory. The execute cycle is executed to decode the instruction and to perform the work instructed by the instruction.

41.What is Block and Demand transfer mode DMA?
In Block transfer mode, the DMA controller will transfer a block of data and relieve the bus for processor. After sometime another block of data is transferred by DMA and so on. In Demand transfer mode the DMA controller will complete the entire .data transfer at a stretch and then relieve the bus to processor.

42. What is the need for timing diagram?
The timing diagram provides information regarding the status of various signals, when a machine cycle is executed. The knowledge of timing diagram is essential for system designer to select matched peripheral devices like memories, latches, ports, etc., to form a microprocessor system.

43. How many machine cycles constitute one instruction cycle in 8085?

Each instruction of the 8085 processor consists of one to five machine cycles.

44. Define opcode and operand.
Opcode (Operation code) is the part of an instruction / directive that identifies a specific operation.
Operand is a part of an instruction / directive that represents a value on which the instruction acts.

45. What is opcode fetch cycle?
The opcode fetch cycle is a machine cycle executed to fetch the opcode of an instruction stored in memory. Every instruction starts with opcode fetch machine cycle.

46. What operation is performed during first T -state of every machine cycle in 8085 ?
In 8085, during the first T -state of every machine cycle the low byte address is latched into an external latch using ALE signal.

47. Why status signals are provided in microprocessor?
The status signals can be used by the system designer to track the internal operations of the processor. Also, it can be used for memory expansion (by providing separate memory banks for program & data and selecting the bank using status signals).

48. How the 8085 processor differentiates a memory access (read/write) and 1/0 access (read/write)?
The memory access and 1/0 access is differentiated using 10 I M signal. The 8085 processor asserts 10 I M low for memory read/write operation and 10 I M is asserted high for 1/0 read/write operation.

49. When the 8085 processor checks for an interrupt?
In the second T -state of the last machine cycle of every instruction, the 8085 processor checks whether an interrupt request is made or not.

50. What is interrupt acknowledge cycle?
The interrupt acknowledge cycle is a machine cycle executed by 8085 processor to get the address of the interrupt service routine in-order to service the interrupt device.

51. How the interrupts are affected by system reset?
Whenever the processor or system is resetted , all the interrupts except TRAP are disabled. fu order to enable the interrupts, El instruction has to be executed after a reset.

52. What is Software interrupts?
The Software interrupts are program instructions. These instructions are inserted at desired locations in a program. While running a program, if software interrupt instruction is encountered then the processor executes an interrupt service routine.

53. What is Hardware interrupt?

If an interrupt is initiated in a processor by an appropriate signal at the interrupt pin, then the interrupt is called Hardware interrupt.

54. What is the difference between Hardware and Software interrupt?

The Software interrupt is initiated by the main program, but the Hardware interrupt is initiated by an external device. In 8085, the Software interrupt cannot be disabled or masked but the Hardware interrupt except TRAP can be disabled or masked.

55. What is Vectored and Non- Vectored interrupt?

When an interrupt is accepted, if the processor control branches to a specific address defined by the manufacturer then the interrupt is called vectored interrupt. In Non-vectored interrupt there is no specific address for storing the interrupt service routine. Hence the interrupted device should give the address of the interrupt service routine.

56. List the Software and Hardware interrupts of 8085?

Software interrupts: RST 0, RSTl, RST 2, RST 3, RST 4, RST 5,RST 6 and RST 7.

Hardware interrupts: TRAP, RST 7.5, RST 6.5,RST 5.5 and INTR.

57. What is TRAP?

The TRAP is non-maskable interrupt of8085. It is not disabled by
processor reset or after reorganization of interrupt.

58. Whether HOLD has higher priority than TRAP or not?

The interrupts including mAP are recognized only if the HOLD is not valid, hence TRAP has lower priority than HOLD.

59. What is masking and why it is required?

Masking is preventing the interrupt from disturbing the current program execution. When the processor is performing an important job (process) and if the process should not be interrupted then all the interrupts should be masked or disabled. In processor with multiple 'interrupts, the lower priority interrupt can be masked so as to prevent it from interrupting, the execution of interrupt service routine of higher priority interrupt.

60. When the 8085 processor accept hardware interrupt?

The processor keeps on checking the interrupt pins at the second T -state of last Machine cycle of every instruction. If the processor finds a valid interrupt signal and if the interrupt is unmasked and enabled then the processor accepts the interrupt. The acceptance of the interrupt is acknowledged by sending an OOA signal to the interrupted device.

61. When the 8085 processor will disable the interrupt system?

The interrupts of 8085 except TRAP are disabled after anyone of the following operations

1. Executing El instruction.   2. System or processor reset.

3. After reorganization (acceptance) of an interrupt.

62. What is the function performed by Dl instruction?

The function of Dl instruction is to enable the disabled interrupt system.

63. What is the function performed by El instruction?
The El instruction can be used to enable the interrupts after disabling.

64. How the vector address is generated for the INTR interrupt of 8085?
For the interrupt INTR, the interrupting device has to place either RST opcode or CALL opcode followed by l6-bit address. I~RST opcode is placed then the corresponding vector address is generated by the processor. In case of CALL opcode the given l6-bit address will be the vector address.

65. How clock signals are generated in 8085 and what is the frequency of the internal clock?
The 8085 has the clock generation circuit on the chip but an external quartz crystal or L C circuit or RC circuit should be connected at the pins XI and X2. The maximum internal clock frequency of 8085A is 3.03 MHz.

66. What happens to the 8085 processor when it is resetted?
When the 8085 processor is resetted it execute the first instruction at the OOOOH location. The 8085 resets (clears) instruction register, interrupt mask bits and other registers.

67. What are the operations performed by ALU of 8085?
The operations performed by ALU of 8085 are Addition, Subtraction, Logical AND, OR, Exclusive OR, Compare Complement, Increment,Decrement and Left I Right shift

68. What is a flag?
Flag is a flip flop used to store the information about the status of the processor and the status of the instruction executed most recently.

69. List the flags of 8085
There are five flags in 8085. They are sign flag, zero flag, Auxiliary carry flag, parity flag and carry flag.

70. What is the Hardware interrupts of 8085?
The hardware interrupts in 8085 are TRAP, RST 7.5, RST 6.5 and RST 5,5. 41.

71.Which interrupt has highest priority in 8085? What is the priority of other interrupts?
The TRAP has the highest priority, followed by RST 7.5, RST 6.5, RST 5.5 and INTR.

72 What is an ALE?
The ALE (Address Latch Enable) is a signal used to demultiplex the address and data lines, using an external latch. It is used to enable the external latch.

73. Explain the function of IO/M in 8085.
The IO/M is used to differentiate memory access and I/O access. For IN and OUT instruction it is high. For memory reference instructions it is low.

74. Where is the READY signal used?

READY is an input signal to the processor, used by the memory or I/O devices to get extra time for data transfer or to introduce wait states in the bus cycles.

75. What is HOLD and HLDA and how it is used?

Hold and hold acknowledge signals are used for the Direct Memory Access (DMA) type of data transfer. The DMA controller place a high on HOLD pin in order to take control of the system bus. The HOLD request is acknowledged by the 8085 by driving all its tristated pins to high impedance state and asserting HLDA signal high.

76.What is Polling?

Polling is a scheme or an algorithm to identify the devices interrupting the processor. Polling is employed when multiple devices interrupt the processor through one interrupt pin of the processor.

77. What are the different types of Polling?

The polling can be classified into software and hardware polling. In software polling the entire polling process is govern by a prograrn.1n hardware polling, the hardware takes care of checking the status of interrupting devices and allowing one by one to the processor.

78.What is the need for interrupt controller?

The interrupt controller is employed to expand the interrupt inputs. It can handle the interrupt request from various devices and allow one by one to the processor.

79. List some of the features of INTEL 8259 (Programmable Interrupt Controller)

1. It manage eight interrupt request
2. The interrupt vector addresses are programmable.
3. The priorities of interrupts are programmable.
4. The interrupt can be masked or unmasked individually.

80. What is a programmable peripheral device ?

 If the functions performed by a peripheral device can be altered or changed by a program instruction then the peripheral device is called programmable device. Usually the programmable devices will have control registers. The device can be programmed by sending control word in the prescribed format to the control register.

81. What is synchronous data transfer scheme?

For synchronous data transfer scheme, the processor does not check the readiness of the device after a command have been issued for read/write operation. fu this scheme the processor will request the

device to get ready and then read/W1.ite to the device immediately after the request. In some synchronous schemes a small delay is allowed after the request.

82. What is asynchronous data transfer scheme?

In asynchronous data transfer scheme, first the processor sends a request to the device for read/write operation. Then the processor keeps on polling the status of the device. Once the device is ready, the processor execute a data transfer instruction to complete the process.

83. What are the operating modes of 8212?

The 8212 can be hardwired to work either as a latch or tri-state buffer. If mode (MD) pin is tied HIGH then it will work as a latch and so it can be used as output port. If mode (MD) pin is tied LOW then it work as tri- state buffer and so it can be used as input port.

84. Explain the working of a handshake output port

In handshake output operation, the processor will load a data to port. When the port receives the data, it will inform the output device to collect the data. Once the output device accepts the data, the port will inform the processor that it is empty. Now the processor can load another data to port and the above process is repeated.

85. What are the internal devices of 8255 ?

The internal devices of 8255 are port-A, port-B and port-C. The ports can be programmed for either input or output function in different operating modes.

86. What is baud rate?

The baud rate is the rate at which the serial data are transmitted. Baud rate is defined as l /(The time for a bit cell). In some systems one bit cell has one data bit, then the baud rate and bits/sec are same.

87. What is USART?

The device which can be programmed to perform Synchronous or Asynchronous serial communication is called USART (Universal Synchronous Asynchronous Receiver Transmitter). The INTEL 8251Ais an example of USART.

88. What are the functions performed by INTEL 8251A?

The INTEL 825lA is used for converting parallel data to serial or vice versa. The data transmission or reception can be either asynchronously or synchronously. The 8251A can be used to interface MODEM and establish serial communication through MODEM over telephone lines.

89. What is an Interrupt?

Interrupt is a signal send by an external device to the processor so as to request the processor to perform a particular task or work.

90. What are the control words of 8251A and what are its functions ?

The control words of 8251A are Mode word and Command word. The mode word informs 8251 about the baud rate, character length, parity and stop bits. The command word can be send to enable the data transmission and reception .

91. What are the information that can be obtained from the status word of 8251 ?
The status word can be read by the CPU to check the readiness of the transmitter or receiver and to check the character synchronization in synchronous reception. It also provides information regarding various errors in the data received. The various error conditions that can bechecked from the status word are parity error, overrun error and framing error.

92. Give some examples of input devices to microprocessor-based system.
The input devices used in the microprocessor-based system are Keyboards, DIP switches, ADC, Floppy disc, etc.

93. What are the tasks involved in keyboard interface?
The task involved in keyboard interfacing are sensing a key actuation, Debouncing the key and Generating key codes (Decoding the key). These task are performed software if the keyboard is interfaced through ports and they are performed by hardware if the keyboard is interfaced through 8279.

94. How a keyboard matrix is formed in keyboard interface using 8279?
The return lines, RLo to RL7 of 8279 are used to form the columns of keyboard matrix. In decoded scan the scan lines SLo to SL3 of 8279 are used to form the rows of keyboard matrix. In encoded scan mode, the output lines of external decoder are used as rows of keyboard matrix.

95. What is scanning in keyboard and what is scan time?
The process of sending a zero to each row of a keyboard matrix and reading the columns for key actuation is called scanning. The scan time Downloaded from www.Rejinpaul.com Get Unique study materials from www.rejinpaul.comis the time taken by the processor to scan all the rows one by one starting from first row and coming back to the first row again.

96. What is scanning in display and what is the scan time?
In display devices, the process of sending display codes to 7 –segment LEDs to display the LEDs one by one is called scanning (or multiplexed display). The scan time is the time taken to display all the 7-segment LEDs one by one, starting from first LED and coming back to the first LED again.

97. What are the internal devices of a typical DAC?
The internal devices of a DAC are R/2R resistive network, an internal latch and current to voltage converting amplifier.

98. What is settling or conversion time in DAC?

The time taken by the DAC to convert a given digital data to corresponding analog signal is called conversion time.

99. What are the different types of ADC?

The different types of ADC are successive approximation ADC, counter type ADC flash type ADC, integrator converters and voltageto-frequency converters.

100. Define stack

Stack is a sequence of RAM memory locations defined by the programmer.

101. What is program counter? How is it useful in program execution?

The program counter keeps track of program execution. To execute a program the starting address of the program is loaded in program counter. The PC sends out an address to fetch a byte of instruction from memory and increments its content automatically.

102. How the microprocessor is synchronized with peripherals?

The timing and control unit synchronizes all the microprocessor operations with clock and generates control signals necessary for communication between the microprocessor and peripherals.

103. What is a minimum system and how it is formed in 8085?

A minimum system is one which is formed using minimum number of IC chips, The 8085 based minimum system is formed using 8155,8355 and 8755.

104. What is mean by microcontroller

A device which contains the microprocessor with integrated peripherals like memory, serial ports, parallel ports, timer/counter, interrupt controller, data acquisition interfaces like ADC,DAC is called microcontroller.

105.List the features of 8051 microcontroller?

The features are

*single_supply +5 volt operation using HMOS technology.

*4096 bytes program memory on chip(not on 8031)

*128 data memory on chip.

*Four register banks.

*Two multiple mode,16-bit timer/counter.

*Extensive boolean processing capabilities. *64 KB external RAM size

*32 bidirectional individually addressible I/O lines.

*8 bit CPU optimized for control applications.

106.Explain the operating mode0 of 8051 serial ports?

In this mode serial enters &exits through RXD, TXD outputs the shift clock.8 bits are transmitted/received:8 data bits(LSB first).The baud rate is fixed at 1/12 the oscillator frequency.

107 Explain the operating mode2 of 8051 serial ports?

In this mode 11 bits are transmitted(through TXD)or received (through RXD):a start bit(0), 8 data bits(LSB first),a programmable 9th data bit ,& a stop bit(1).ON transmit the 9th data bit (TB* in SCON)can be assigned the value of 0 or 1.Or for eg:, the parity bit(P, in the PSW)could be
moved into TB8.On receive the 9th data bit go in to the RB8 in SpecialFunction Register SCON, while the stop bit is ignored. The baud rate is programmable to either 1/32or1/64 the oscillator frequency.

108. Explain the mode3 of 8051 serial ports?

In this mode,11 bits are transmitted(through TXD)or received(through RXD):a start bit(0), 8 data bits(LSB first),a programmable 9th data bit ,& a stop bit(1).In fact ,Mode3 is the same as Mode2 in all respects except the baud rate. The baud rate in Mode3 is variable. In all the four modes, transmission is initiated by any instruction that uses SBUF as a destination register. Reception is initiated in Mode0 by the condition RI=0&REN=1.Reception is initiated in other modes by the incoming start bit if REN=1.

109.Explain the interrupts of 8051 microcontroller?

The interrupts are:

Vector address

⮚ External interrupt 0 : IE0 : 0003H

⮚ Timer interrupt 0 : TF0 : 000BH

⮚ External interrupt 1 : IE1 : 0013H

⮚ Timer Interrupt 1 : TF1 : 001BH

⮚ Serial Interrupt

Receive interrupt : RI : 0023H

Transmit interrupt: TI : 0023H

110.Write A program to perfom multiplication of 2 nos using 8051?

MOV A,#data 1

MOV B,#data 2

MUL AB

MOV DPTR,#5000

MOV @DPTR,A(lower

value) INC DPTR

MOV A,B

MOVX @ DPTR,A

111.Write a program to mask the 0th &7th bit using

8051? MOV A,#data

ANL A,#81

MOV DPTR,#4500

MOVX @DPTR,A

LOOP SJMP LOOP

112.List the addressing modes of 8051?
⬜ Direct addressing
⬜ Register addressing
⬜ Register indirect addressing.
⬜ Implicit addressing
⬜ Immediate addressing
⬜ Index addressing
⬜ Bit addressing

113.Write about CALL statement in 8051?
There are two subroutine CALL instructions. They
are *LCALL(Long CALL)
*ACALL(Absolute CALL)
Each increments the PC to the 1st byte of the instruction & pushes them in to the stack.

114.Write about the jump statement?
There are three forms of jump. They are
LJMP(Long jump)-address 16
AJMP(Absolute Jump)-address 11
SJMP(Short Jump)-relative address

115.Write program to load accumulator ,DPH,&DPL using 8051?
 MOV A,#30
MOV DPH,A
MOV DPL,A

116.Write a program to find the 2's complement using 8051?
MOV A,R0
CPL A
INC A

117.Write a program to add 2 8-bit numbers using 8051?
MOV A,#30H
ADD A,#50H

118.Write a program to swap two numbers using 8051?
MOV A, #data
SWAP A

119.Write a program to subtract 2 8-bit numbers &exchange the digits using 8051?
MOV A,#9F

MOV R0,#40
SUBB A,R0
SWAP A

120.Write a program to subtract the contents of R1 of Bank 0from the contents of R0 of Bank 2 using 8051?
MOV PSW,#10
MOV A,R0
MOV PSW,#00
SUBB A,R1

Part B

1. Draw & explain the architecture of 8085 microprocessor
⬛ Block Diagram　　　⬛ Registers Available　　　⬛ Function Of Accumulator
⬛ Explanation about all blocks in the block diagram

2. Draw the Pin Diagram of 8085 and explain the function of various signals.
⬛ Pin Diagram　　　⬛ Explanation about all signals

3. Explain the instruction classification & instruction sets
⬛ Data Transfer Instructions
⬛ Arithmetic Instructions
⬛ Logical Instructions
⬛ Branch Instructions
⬛ Machine Control Instructions

4. Write a program to sort the numbers in ascending and descending order.
⬛ Program
⬛ Result Verification

5.Draw the timing diagram of the following Instructions
⬛ PUSH
⬛ IN Port A
⬛ STA 5000
⬛ MVI A, 08
⬛ Explain the machine cycles needed for every Instructions and
draw the timing diagram

6. Explain the 8085 based microcomputer system
7. With neat sketch explain the functions of 8255 PPI.
⬛ Block Diagram
⬛ Explanation about all the ports available.

Explanation about the modes of transfer

 Explain the control Word Register

8. With neat sketch explain the functions of 8251.

 Block Diagram

 Types of data transfer

 Explanation about all the blocks.

 Explain the control Word Register, Status Register

9. With neat sketch explain the function of DMA contoller.

 Block Diagram

 Explanation about all blocks in the block diagram

10.With neat sketch explain the function of Programmable Interrupt Controller.

 Block Diagram

 Explanation about all blocks in the block diagram

11.With neat sketch explain the function of Keyboard and display controller.

 Block Diagram

 Types of Display Available

 Types of keys available

 Explanation about all blocks in the block diagram

12. With neat sketch explain the function of A/D converter.

 Fundamental steps

 Figure

 Explain the functions.

13. With neat sketch explain the function of D/A converter.

 Fundamental steps

 Figure

 Explain the functions.

14.With neat sketch explain the architecture of 8051 microcontroller.

 Block Diagram

 Explanation about all blocks in the block diagram

15. Draw the Pin Diagram of 8051 and explain the function of various signals.

 Pin Diagram

 Explanation about all signals

16. List the various Instruction available in 8051 microcontroller.

 Data Transfer Instructions

 Arithmetic Instructions

 Logical Instructions

 Boolean variable Manipulation Instructions

 Program and Machine Control Instructions