

# **Question Bank**

## **Microprocessor and Interfacing (BECE1-517)**

**B.Tech., 5<sup>th</sup> Semester ECE**

### **Introduction to Microprocessor**

**Marks: 2 each**

1. List the components of a computer
2. Explain the function of each component of a computer.
3. What is a Microprocessor? What is the difference between a Microprocessor & CPU?
4. Define bit, byte, word, double word, quad word and instruction
5. What determines that Microprocessor is an 8, 16 or 32 bit?
6. Explain the difference between the machine language and the assembly language of the 8085 microprocessor.
7. What is an assembler?
8. What are low and high level languages?
9. What are the advantages of an assembly language in comparison with high level languages?
10. List the four operations commonly performed by the MPU.
11. Specify the four control signals commonly used by the 8085 MPU.
12. Specify the function of the address bus and the direction of the information flow on the address bus.
13. Why is the data bus bidirectional?
14. What is a bus?

### **8085 Microprocessor**

**Marks: 2 each**

15. How many memory locations can be addressed by a microprocessor with 14 address lines?
16. How many address lines are necessary to address two megabytes (2048K) of memory?
17. Why is the data bus bidirectional?
18. Specify the control signal and the direction of the data flow on the data bus in a memory-write operation.
19. What is the function of the accumulator?
20. What is a flag?
21. Why are the program counter and the stack pointer 16-bit registers?
22. What is the function of the WR signal on the memory chip?
23. Specify the number of registers and memory cells in a 128 x 4 memory chip.
24. What is the memory word size required in an 8085 system?

25. While executing a program, when the 8085 MPU completes the fetching of the machine code located at the memory address 2057H, what is the content of the program counter?
26. What is the role of clock in Microprocessor?

**Marks: 5 each**

27. What is the difference between INR & INX instructions?
28. List all the interrupt signals of 8085 microprocessor.
29. Write short note on evolution of microprocessors.
30. Explain the functions of the ALE and IO/M signals of the 8085 microprocessor.
31. List the sequence of events that occurs when the 8085 MPU reads from memory.
32. If the 8085 adds 87H and 79H, specify the contents of the accumulator and the status of the S, Z, and CY flags.
33. If the clock frequency is 5 MHz, how much time is required to execute an instruction of 18 T-states?
34. Discuss the programming model of 8085  $\mu$ P with the help of suitable diagram.
35. Draw and explain the timing diagram for opcode fetch operation
36. Discuss various types of addressing modes of 8085.
37. Explain why the number of output ports in the peripheral-mapped I/O is restricted to 256 ports.
38. In the peripheral-mapped I/O, can an input port and an output port have the same port address? Explain.
39. What are the control signals necessary in the memory-mapped I/O?
40. List the four categories of 8085 instructions that manipulate data.
41. Define opcode and operand, and specify the opcode and the operand in the instruction MOV H, L.
42. Write logical steps to add the following two Hex numbers. Both the numbers should be saved for future use. Save the sum in the accumulator. Numbers: A2H and 18H.

**Marks: 10 each**

43. (a) Specify the contents of the registers and the flag status as the following instructions are executed.
  - i. MVI A, 00H
  - ii. MVI B, F8H
  - iii. MOV C, A
  - iv. MOV D, B
  - v. HLT(b) Write instructions to load the hexadecimal number 65H in register C and 92H in the accumulator A. Display the number 65H at PORT0 and 92H at PORT1.
44. Draw and explain the block diagram of a microprocessor 8085.
45. (a) Why the lower order address bus is multiplexed with data bus? How they will be de-multiplexed?  
(b) Differentiate between maskable and non-maskable interrupts.
46. Write an 8085 assembly language program using minimum number of instructions to add the 16 bit no. in BC, DE & HL. Store the 16 bit result in DE pair.

47. (a) Explain in detail the following instructions:-  
(i) ADC (ii) LHL (iii) RLC (iv) DI  
(b) Define & explain the term addressing modes.

### **8086 Microprocessor**

**Marks: 2 each**

48. What are important signals of Intel 8086?  
49. How many operating modes does 8086 have?  
50. How many functional units does 8086 contain?  
51. What is the function of a segment register in 8086?  
52. What are conditional and control flags in 8086?  
53. How many interrupt lines does 8086 have?  
54. What physical address is represented by:  
(i) 4370 : 561E H (ii) 7A32 : 0028 H  
55. Describe the difference between the instructions:  
(i) MOV AL,0DB H (ii) MOV AL,DB H

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56. Briefly explain the maximum mode configuration of 8086.  
57. What is the difference between minimum and maximum modes of 8086?  
58. How many interrupts are available in 8086? List the predefined software interrupts available in 8086.  
59. Briefly explain the maximum mode configuration of 8086.  
60. What is the purpose of MN/Mx pin? Explain.  
61. Explain the concept of segmented memory? What are its advantages?  
62. Explain the concept of pipelining in 8086. Discuss its advantages and disadvantages.

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63. Discuss the interrupt system of Intel 8086. What is interrupt pointer? What is 'type' of an interrupt?  
64. Discuss the various addressing modes of 8086. What are displacement, base and index? What is an effective address or offset?  
65. What is the difference between minimum and maximum modes of 8086? How are these modes selected?  
66. Draw and explain the architecture of 8086.  
67. Write an 8086 program to add two 16-bit numbers in CX and DX and store the result in location 0500H addressed by DI.

### **Microprocessor system peripheral and interface**

**Marks: 5 each**

68. What is interfacing?  
69. Explain the concept of Direct Memory Access (DMA).  
70. Explain the functions of Handshake signals.

71. Explain what SIM is. Discuss the bit pattern of the accumulator for SIM instruction.
72. List the operating modes of the 8155A programmable device.
73. Write a note on any of the applications of microprocessors.

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74. Explain the DMA controller 8257?
75. Draw the block diagram of 8255 and explain its working. What is Control Word?  
Determine the control word for the following configuration of 8255:-  
Port A – Output  
Mode of port A – Mode 1  
Port B – Output  
Mode of port B – Mode 0  
Port C lower (pins PC0 – PC2) – Output
76. What is 8254? Discuss its various operating modes. What are its areas of applications?
77. Explain major components of 8259 with the aid of suitable diagram.
78. Explain USART in detail.
79. Explain the functional diagram of keyboard and display controller.
80. Explain the functional diagram of 8155 and explain its control word.