

I'll analyze your syllabus and exam papers for the Microprocessor and Interfacing course (3160712) to organize the questions chapter-wise. Let me categorize the questions from the exam papers based on the syllabus content areas.

Chapter 1: Introduction to Microprocessor, Components of a Microprocessor

Questions:

1. Define (1) Microprocessor (2) System Bus (3) Instruction Cycle [S-24, Q1(a), 3 marks]
2. Explain the difference between a microprocessor and a microcomputer. [W-23, Q1(a), 3 marks]
3. List the key parts of a microprocessor and give a short explanation of their functions. [W-24, Q1(a), 3 marks]
4. Differentiate between Microcontroller and Microprocessor. [S-23, Q1(a), 3 marks]

Chapter 2: Microprocessor Architecture and Operations, Memory, I/O devices

Questions:

1. Explain memory and I/O operations in a microprocessor. [W-24, Q1(b), 4 marks]
2. Draw and explain the block diagram of a microprocessor 8085. [W-22, Q1(c), 7 marks]
3. Explain Read/Write control signals for memory and I/O. [W-23, Q2(b), 4 marks]
4. Compare memory mapped I/O and I/O mapped I/O. [S-22, Q3(b), 4 marks]
5. Differentiate IO-mapped IO and Memory-mapped IO [S-24, Q4(a), 3 marks]
6. Give comparison of Memory mapped I/O and Peripheral mapped I/O. [W-23, Q4(b), 4 marks]

Chapter 3: 8085 Microprocessor Architecture

Questions:

1. Draw the block diagram of internal architecture of 8085 and explain its working. [S-22, Q1(c), 7 marks]
2. Explain the following pins of 8085: (1) INTR (2) HOLD (3) SOD (4) READY [S-22, Q1(b), 4 marks]
3. Explain demultiplexing of data and address bus of 8085. [S-22, Q2(b), 4 marks]
4. Draw and explain Pin diagram of 8085 Microprocessor [S-24, Q1(c), 7 marks]
5. Draw and Explain Pin diagram of 8085. [W-23, Q1(c), 7 marks]
6. Explain 8085 Programming Model with diagram [S-24, Q1(b), 4 marks]

7. Explain the purpose of the following signals in 8085: READY, AD0-AD7, HOLD, IO/M, INTR [S-23, Q1(b), 4 marks]
8. Define significance of ALE pin with an example or a diagram. [S-23, Q2(b), 4 marks]
9. Define significance of ALE pin with example or a diagram. [W-23, Q1(b), 4 marks]
10. Explain the generation of control signals in 8085. [S-22, Q4(b), 4 marks]
11. Explain 8085 bus organization. [S-22, Q4(b), 4 marks]
12. Describe the architecture of the 8085 microprocessor with a neat diagram. [W-24, Q1(c), 7 marks]
13. Can you provide a diagram illustrating the de-multiplexing of the Address/Data bus (AD0-AD7) in the 8085 microprocessor? [S-23, Q3(b), 4 marks]
14. Describe the functions of (1) READY PIN (2) ALE (3) HOLD (4) X1 and X2 (5) SID and SOD (6) IO/M (7) HLDA [W-22, Q4(c), 7 marks]

Chapter 4: Assembly Language Programming Basics

Questions:

1. Explain the following instructions: 1. LHLD 2. RAL 3. DAA [S-22, Q2(a), 3 marks]
2. Explain Machine level language and Assembly level language with examples. [S-22, Q4(a), 3 marks]
3. Explain instruction format of 8085 instructions [S-24, Q3(a), 3 marks]
4. Define (1) Accumulator (2) Program Counter (3) Stack Pointer [S-24, Q2(a), 3 marks]
5. Define Stack. Explain PUSH and POP instructions [S-24, Q4(a), 3 marks]
6. State the difference between PUSH and POP instruction. [S-22, Q4(a), 3 marks]
7. Explain the flag register in 8085 microprocessor. [S-22, Q1(a), 3 marks]
8. What is a flag Register? Enlist and explain various types of flags. [W-22, Q4(c), 7 marks]
9. Explain various flags use in 8085. [W-23, Q4(a), 3 marks]
10. Explain Assembler, Debugger and Linker with an example. [W-23, Q2(a), 3 marks]
11. Explain Assembler, Debugger and Linker with an example. [W-24, Q2(a), 3 marks]
12. Explain General purpose Data register. [W-23, Q4(a), 3 marks]
13. State the addressing modes of the following instructions: 1. CMA 2. LDA 2500H 3. ANA M 4. LXI SP [S-23, Q3(a), 3 marks]
14. Explain the function of the program counter and stack pointer in the 8085 microprocessor. [W-24, Q3(a), 3 marks]
15. What is the role of the ALU and control unit in the 8085 microprocessor? [W-24, Q3(a), 3 marks]
16. Explain instruction set of 8085. [S-23, Q4(a), 3 marks]

Chapter 5: Writing 8085 assembly language programs

Questions:

1. Write a program to find 2's complement of a number stored at 2050H and store result at 2055H. [S-22, Q3(a), 3 marks]
2. Write an 8085 program to copy block of ten numbers starting from location 2050h to locations starting from 3050h. [S-22, Q3(c), 7 marks]

3. Load the hexadecimal numbers 56H and A9H in registers D and E respectively and add them. If sum is greater than FFH, display 01H at output PORT0; otherwise display sum. [S-22, Q5(b), 4 marks]
4. An array of ten data bytes are stored from memory locations 2100H onwards. Write an 8085 assembly language program to find the minimum number from this array and store it to new memory location 2200H. [S-23, Q3(a), 3 marks]
5. Write an assembly language program in 8085 to arrange five 8-bit numbers in ascending order stored at memory location starting from 3000H [S-24, Q3(c), 7 marks]
6. Write an assembly language program to find the larger number from given two numbers stored at 2501H = 98H, 2502H = 87H result store at 2503H. [W-23, Q3(c), 7 marks]
7. Write an assembly language program to find the smaller number from given two numbers stored at 2501H = 84H, 2502H = 99H result store at 2503H. [W-23, Q3(c), 7 marks]
8. Construct an 8085-assembly language program that takes two values and executes arithmetic addition, subtraction, and a logical AND operation. [W-24, Q3(c), 7 marks]

Chapter 6: Stack & Subroutines, Counters and Time Delay

Questions:

1. Explain the concept of stack. [S-22, Q3(a), 3 marks]
2. Using stack operations, write an 8085 assembly program to set the sign, zero, and parity flags while resetting the auxiliary carry and carry flags. [S-23, Q3(b), 4 marks]
3. Explain counters and time delay with suitable example. Also specify various applications of counters and time delay. [S-24, Q3(c), 7 marks]
4. If an 8085 microprocessor has a 2 MHz crystal frequency, what is the assembly language code required creating a delay of 1 second? [S-23, Q2(c), 7 marks]
5. Define the concepts of stack and subroutines in the context of the 8085 microprocessor. [W-24, Q4(a), 3 marks]
6. Create an 8085-assembly language routine to implement a delay, utilizing both counters and the stack. [W-24, Q4(c), 7 marks]

Chapter 7: Interfacing Concepts, Ports, I/O Devices, Interrupts

Questions:

1. What are interrupts? List and explain the interrupt available in microprocessor 8085? [S-22, Q3(c), 7 marks]
2. Draw the internal block diagram of 8259A and explain the functions of each block in detail. [S-22, Q4(c), 7 marks]
3. Draw the internal block diagram of 8255 and explain the functions of each block in details. [S-22, Q5(c), 7 marks]

4. Explain the internal Block diagram of 8259A. [W-22, Q5(c), 7 marks]
5. Explain the internal Block diagram of 8255A. [W-22, Q5(c), 7 marks]
6. Draw and explain block diagram of 8255A [S-24, Q4(c), 7 marks]
7. Draw and explain block diagram of 8259A [S-24, Q4(c), 7 marks]
8. Explain BSR Mode in 8255A [S-24, Q4(b), 4 marks]
9. Explain classification of Interrupts in 8085 Microprocessor [S-24, Q4(b), 4 marks]
10. Can you provide an example program in assembly language that initializes a single 8259 Programmable Interrupt Controller (PIC) connected to an 8085 processor? [S-23, Q4(c), 7 marks]
11. Discuss the interrupt architecture of the 8085 microprocessor, focusing on both hardware and software interrupt types. [W-24, Q4(c), 7 marks]
12. Define I/O ports and describe their role in the process of microprocessor interfacing. [W-24, Q4(a), 3 marks]
13. Explain the working of the 8255 Programmable Peripheral Interface. [W-24, Q4(b), 4 marks]
14. Describe how the 8259A Programmable Interrupt Controller functions and how it is utilized in microprocessor systems. [W-24, Q4(b), 4 marks]
15. Discuss the operation of the 8255 Programmable Peripheral Interface and how it is interfaced with an 8085 microprocessor. What are the different modes of operation and how are they selected? [S-23, Q4(b), 4 marks]
16. List the Software and Hardware interrupts of 8085? [S-23, Q4(a), 3 marks]
17. Differentiate between maskable and non-maskable interrupts. [W-22, Q4(b), 4 marks]
18. Differentiate between maskable and non-maskable interrupts. [W-23, Q5(a), 3 marks]
19. Differentiate vectored and non-vectored interrupts. [W-22, Q4(b), 4 marks]
20. Differentiate vectored and non-vectored interrupts. [W-23, Q5(a), 3 marks]
21. What is vectored and non-vectored interrupts? [W-22, Q4(b), 4 marks]
22. How many interrupts are there in 8085? Name them. Explain the characteristics in terms of maskability, vectoring and priority. [W-23, Q5(b), 4 marks]

Chapter 8: Advanced Microprocessors

Questions:

1. Explain the given pins of 8086: 1. ALE 2. DEN 3. MN/MX [S-22, Q5(a), 3 marks]
2. Explain the modes of operation of 8086 microprocessor. [S-22, Q5(b), 4 marks]
3. Explain the block diagram of 8086 microprocessor. [S-22, Q5(c), 7 marks]
4. List features of 80386 microprocessor. [W-22, Q5(a), 3 marks]
5. List features of 80486 microprocessor. [W-22, Q5(a), 3 marks]
6. Draw block diagram of SUN SPARC architecture. [W-22, Q5(b), 4 marks]
7. Draw logical block diagram of ARM 7 architecture. [W-22, Q5(b), 4 marks]
8. Draw and explain logical block diagram of 8086 Microprocessor [S-24, Q5(c), 7 marks]
9. Describe flag register in 8086 Microprocessor [S-24, Q5(a), 3 marks]
10. Explain register organization of 80286 Microprocessor [S-24, Q5(b), 4 marks]
11. Describe protected virtual address mode in 80286 Microprocessor [S-24, Q5(a), 3 marks]
12. Explain concepts of segmentation in 8086 Microprocessor [S-24, Q5(b), 4 marks]

13. Draw and explain architecture of 80386 Microprocessor [S-24, Q5(c), 7 marks]
14. Draw and explain the architecture of SUN SPARC microprocessor. [W-23, Q5(c), 7 marks]
15. Give ARM architecture features and explain block diagram of ARM. [W-23, Q5(c), 7 marks]
16. Differentiate 80286 with 80386 microprocessor. [S-23, Q5(a), 3 marks]
17. Describe the importance of bus interface unit (BIU) and execution unit (EU) the 8086 microprocessor. [S-23, Q5(b), 4 marks]
18. Draw and explain internal architecture and PIN diagram of 8086 microprocessor. [S-23, Q5(c), 7 marks]
19. Differentiate between the real mode and protected mode of the 80286 microprocessor. [S-23, Q5(a), 3 marks]
20. How the physical addresses are calculated from segment register in 8086 microprocessor? [S-23, Q5(b), 4 marks]
21. Describe the architecture of the 80286 with a neat block diagram. [S-23, Q5(c), 7 marks]
22. Describe the concept of segmentation in the 8086 microprocessor. [W-24, Q5(a), 3 marks]
23. Compare the minimum mode and maximum mode of the 8086 microprocessor. [W-24, Q5(b), 4 marks]
24. Summarize the architecture and programming model of the 80386 microprocessor. [W-24, Q5(c), 7 marks]
25. Describe the pin configuration of the 8086 microprocessor in detail. [W-24, Q5(a), 3 marks]
26. How does the 80286 microprocessor improve upon the 8086, particularly in terms of memory management? [W-24, Q5(b), 4 marks]
27. Summarize the programming model and data types available in the 80286 microprocessor. [W-24, Q5(c), 7 marks]

Memory Interface and Address Decoding

Questions:

1. Draw the interfacing of a 4KB EPROM having a starting address 0000h and two 2KB static RAMs having starting addresses 4000h and 8000h, respectively, with 8085 microprocessor. Use demultiplexed address/data lines and use 3-to-8 decoder (74LS138). [S-23, Q2(c), 7 marks]
2. Draw the memory interface 4kB of EPROM with starting address from 0000H and 2kB of RAM with starting address followed by EPROM with 8085 Microprocessor [S-24, Q2(c), 7 marks]
3. Explain interfacing of 4KB EPROM with 8085 using decoder and gates as required. Assume starting address as 0000H. [S-22, Q2(c), 7 marks]
4. Explain the memory interfacing with the 8085 microprocessor. [W-24, Q3(b), 4 marks]
5. How many memory locations can be addressed by microprocessor with 14 address lines? Also specify how many address lines are required for 2KB memory. [S-22, Q5(a), 3 marks]

- Find the ending address of an 8K-byte memory if the starting address is '0' [W-23, Q3(a), 3 marks]
- What is the ending address of a 2K-bytes memory whose starting address is 3000H? [W-23, Q3(a), 3 marks]
- Create an assembly program that demonstrates the process of demultiplexing the address and data bus in the 8085 microprocessor, and provide an explanation of how it works. [W-24, Q3(c), 7 marks]

Timing Diagrams and Instruction Execution

Questions:

- Draw timing diagram of instruction MVI A, 32H [S-24, Q2(b), 4 marks]
- Draw and Explain Timing Diagram of MVI A, 45h. [W-23, Q2(c), 7 marks]
- Draw and Explain Timing Diagram of MVI A, 45h. [W-24, Q2(c), 7 marks]
- Explain the timing diagram of the instruction MOV C,A (4FH) stored in location 2005H is being fetched. Define T-state, Machine cycle and Instruction cycle. [S-22, Q2(c), 7 marks]
- List instruction set of 8085. Also explain timing diagram of two-byte instructions. [W-23, Q2(c), 7 marks]
- Identify the machine cycles in the following instructions: 1. SUB B 2. ADI 47H 3. STA 2050H 4. PUSH B [W-24, Q2(c), 7 marks]
- Describe the instruction cycle and machine cycles of the 8085 microprocessor. [W-24, Q3(b), 4 marks]
- 2100 LXI H, 1234H MVI A, 55H ADD M What is the size of ADD M instruction? Name the machine cycles. Draw machine cycle and T-state diagram and specify the content of address bus, data bus and control signals *RD, *WR, IO/*M and ALE signals and status signals S1 and S0 for every T states of ADD M instruction only. [W-22, Q3(c), 7 marks]
- Can you describe the process by which the 8085 processor executes the CALL instruction, and how does the timing diagram illustrate this sequence of events? [S-23, Q3(c), 7 marks]
- Specify the addressing mode, required Machine cycles, T-States and function for following instructions: 1. MVI M, 45H 2. RAL 3. LHLD 2300H [W-22, Q3(c), 7 marks]

Instruction Set and Addressing Modes

Questions:

- Elaborate different addressing modes in 8085 with suitable examples [S-24, Q2(c), 7 marks]
- Discuss various types of addressing modes of 8085. [W-22, Q1(a), 3 marks]
- Explain One byte, Two byte, Three byte and write short note on different types of instruction sets. [W-22, Q3(b), 4 marks]
- Explain classification of instructions based on byte size with examples [S-24, Q3(a), 3 marks]

5. Explain One byte, Two byte, Three byte and write short note on different types of instruction sets. [W-23, Q4(c), 7 marks]
6. Explain Indirect and Immediate addressing mode with example. [W-23, Q4(b), 4 marks]
7. Describe any four arithmetic instructions in 8085 with examples [S-24, Q3(b), 4 marks]
8. Describe any four data transfer instructions in 8085 with examples [S-24, Q3(b), 4 marks]
9. Explain arithmetic instructions of 8085. [S-22, Q3(b), 4 marks]
10. If an 8085 is an 8 bit microprocessor, how many bits can be loaded by the register pairs (BC, DE, HL, or SP) using LXI? [S-23, Q2(a), 3 marks]
11. Explain various conditional jump instructions with example. [W-23, Q5(b), 4 marks]
12. What are the states of the Auxiliary Carry (AC), Carry (CY), sign(S) and parity (P) flags after executing the following 8085 program? MVI L, 5DH MVI A, 6BH ADD L [W-22, Q3(a), 3 marks]
13. What are the states of the Auxiliary Carry (AC), Carry (CY), sign(S) and parity (P) flags after executing the following 8085 program? MVI A, A9H MVI B, 57H ADD B ORA A [W-22, Q3(a), 3 marks]
14. What are the contents in Register H and L after executing the following 8085 program? MVI L, 01H MVI H, 00H INX H [W-23, Q3(b), 4 marks]
15. What are the states of the Carry (C), Zero (Z) flags and content in Accumulator (A) after executing the following 8085 program? MVI L, 01H MVI A, 00H SUB L [W-23, Q3(b), 4 marks]
16. How does the instruction sequence MVI A, 07H RLC MOV B, A RLC RLC ADD B Use the values stored in registers A and B to execute a specific mathematical function in an assembly language program? [S-23, Q4(c), 7 marks]
17. Explain 8085 Programming model and classify instruction set on the basis of different addressing modes. [W-22, Q3(b), 4 marks]
18. Explain 8085 Programming model and classify instruction set on the basis of different addressing modes. [W-23, Q4(c), 7 marks]
19. Explain the different addressing modes available in the 8085 microprocessor, with examples to illustrate each mode. [S-23, Q3(c), 7 marks]
20. Difference between RLC and RAL instruction. [W-22, Q4(a), 3 marks]
21. Difference between RRC and RAR instruction. [W-22, Q4(a), 3 marks]

This comprehensive list covers all the questions from your exam papers organized by chapter according to the syllabus. I've included the paper reference (S-22 for Summer 2022, W-23 for Winter 2023, etc.), the question number, and the marks allocated.