Short Questions

1. What is the fundamental purpose of a digital computer?
2. Explain the basic components of the block diagram of a digital computer.
3. Define Computer Organization.
4. Differentiate between Computer Design and Computer Architecture.
5. What is Register Transfer Language (RTL)?
6. How is data transferred in Register Transfer?
7. Define Bus in the context of computer organization.
8. Explain the concept of memory transfers in a computer system.
9. What are Arithmetic Micro operations in computer architecture?
10. Define Logic Micro operations.
11. Describe shift micro operations in computer architecture.
12. What is the role of Arithmetic Logic Shift Unit (ALU) in a computer system?
13. Explain the concept of Instruction codes.
14. Name the types of computer registers commonly used in computer organization.
15. Define Computer Instructions.
16. What is the significance of Timing and Control in computer architecture?
17. Describe the Instruction cycle in a computer system.
18. Explain Memory Reference Instructions.
19. How does Input-Output play a role in computer organization?
20. Define Interrupt in the context of computer architecture.

21. What is the purpose of the Control Unit in a computer system?
22. Explain the role of the Accumulator register.
23. Differentiate between Horizontal and Vertical micro operations.
24. What is the purpose of the Program Counter (PC) in computer architecture?
25. Define the term "Pipeline" in computer organization.
26. Explain the Von Neumann architecture.
27. What is the significance of the Fetch-Execute cycle?
28. Describe the role of the Memory Buffer Register (MBR) in data transfer.
29. What is the purpose of the Memory Address Register (MAR)?
30. Differentiate between RISC and CISC architectures.
31. Explain the concept of Little Endian and Big Endian in computer systems.
32. What is the purpose of the Index Register in computer architecture?
33. Describe the role of the Stack Pointer in a computer system.
34. Define the term "Microprogramming" in computer organization.
35. Explain the difference between synchronous and asynchronous data transfer.
36. What is the significance of the Memory Hierarchy in computer architecture?
37. Describe the role of the Input Buffer Register (IBR) in input operations.
38. What is the purpose of the Output Buffer Register (OBR) in output operations?
39. Explain the concept of Addressing Modes in computer instructions.
40. Define the term "Pipelining" in computer architecture.
41. What is the function of the Instruction Register (IR) in a computer system?

42. Explain the role of the Data Buffer Register (DBR) in data transfer.
43. Describe the purpose of the Program Status Word (PSW) in computer organization.
44. Define the term "Interrupt Vector" in the context of interrupts.
45. How does a computer system handle External Interrupts?
46. Explain the role of the System Clock in computer architecture.
47. What is the significance of the Arithmetic Shift operation?
48. Describe the role of the Control Memory in microprogramming.
49. Define the term "Bus Arbitration" in computer organization.
50. How does a computer system handle Non-maskable Interrupts (NMI)?
51. Define microprogrammed control and its role in computer architecture.
52. What is control memory in the context of microprogramming?
53. Explain the significance of address sequencing in microprogramming.
54. Provide an example of a microprogram and describe its components.
55. How does the design of the control unit impact the overall performance of a computer system?
56. Define Central Processing Unit (CPU) in computer architecture.
57. Explain the concept of General Register Organization within a CPU.
58. What are the different instruction formats used in computer architectures?
59. Describe the various addressing modes commonly employed in CPUs.
60. How does data transfer occur within the CPU during program execution?
61. Explain the role of the Program Control unit in the CPU.

62. Differentiate between hardwired control and microprogrammed control.
63. Discuss the advantages and disadvantages of microprogrammed control.
64. Define the term "opcode" in the context of instruction formats.
65. What is the purpose of the operand field in an instruction format?
66. Explain the concept of direct addressing in addressing modes.
67. How does immediate addressing differ from direct addressing?
68. Describe the role of the accumulator in General Register Organization.
69. What are the primary components of the data manipulation unit in a CPU?
70. Explain the concept of pipelining in the context of CPU design.
71. Discuss the importance of parallel processing in computer architecture.
72. How does the CPU handle conditional and unconditional branches in program control?
73. Define the term "fetch-execute cycle" and its significance.
74. Describe the impact of cache memory on CPU performance.
75. Explain the concept of Little-Endian and Big-Endian byte ordering.
76. How do RISC (Reduced Instruction Set Computing) architectures differ from CISC (Complex Instruction Set Computing) architectures?
77. Discuss the role of the ALU (Arithmetic Logic Unit) in data manipulation.
78. What is the purpose of the program counter in the CPU?
79. Explain the significance of instruction pipelining in improving CPU performance.
80. How does the CPU handle interrupts during program execution?
81. Define the term "bus" in the context of computer architecture.

82. Discuss the advantages and disadvantages of parallel processing in CPUs.
83. What is the role of the stack pointer in the CPU?
84. Explain the concept of instruction sequencing in the context of control units.
85. How does the CPU handle subroutine calls and returns?
86. Describe the differences between horizontal and vertical microinstructions.
87. What is the significance of the MAR (Memory Address Register) in CPU design?
88. Discuss the role of the MBR (Memory Buffer Register) in data transfer.
89. Explain the concept of indirect addressing in addressing modes.
90. How does the CPU perform arithmetic operations on binary numbers?
91. Discuss the impact of clock speed on CPU performance.
92. Define the term "opcode field" in an instruction format.
93. Explain the purpose of the instruction register (IR) in the CPU.
94. Discuss the differences between synchronous and asynchronous control.
95. What is the role of the condition code register in program control?
96. How does the CPU handle multi-level caching for memory access?
97. Explain the concept of instruction decoding in the CPU.
98. Discuss the trade-offs between using registers and memory for data storage.
99. How does the instruction pipeline contribute to overall CPU efficiency?
100. Define the term "microinstruction" and its role in microprogramming.
101. What is the purpose of data representation in computers?
102. Define data types in the context of computer architecture.

103. Explain the concept of complements in data representation.
104. Differentiate between fixed-point and floating-point representation.
105. Why is fixed-point representation used in certain applications?
106. Describe the significance of floating-point representation in computer systems.
107. How are addition and subtraction performed in computer arithmetic?
108. Discuss the multiplication algorithms used in computer arithmetic.
109. Explain the process of division in computer arithmetic.
110. 110. What are the challenges in implementing floating-point arithmetic operations?
111. Describe the significance of the decimal arithmetic unit in computers.
112. How do decimal arithmetic operations differ from binary arithmetic operations?
113. Discuss the role of data types in computer programming languages.
114. Explain the concept of two's complement in data representation.
115. Why is sign-magnitude representation less commonly used in computers?
116. Differentiate between fixed-point and floating-point arithmetic.
117. What is the role of the exponent in floating-point representation?
118. Discuss the advantages of using floating-point arithmetic in scientific computations.
119. How is rounding handled in floating-point arithmetic?
120. Explain the process of normalizing floating-point numbers.
121. Compare and contrast integer and floating-point multiplication algorithms.
122. What challenges are associated with implementing floating-point division?

123. Define the term "word" in the context of computer architecture.

124. Discuss the role of the arithmetic logic unit (ALU) in computer organization.

125. Explain the importance of the carry bit in addition operations.