Question Bank

Subject: Computer Organization & Architecture

Subject Code: BTES401-18

Very Short Answer Type

1. What are the functional blocks of a computer?

2. What is the role of the CPU in a computer system?

3. Define instruction set architecture (ISA)?

4. What is an instruction execution cycle?

5. What is the function of the control unit in a CPU?

6. Name any two addressing modes in a CPU?

7. What is the purpose of registers in a CPU?

8. What is RTL (Register Transfer Level)?

9. List two types of number representations in computers?

10. Define signed number representation?

11. What is a fixed-point number representation?

12. Define floating-point representation?

13. How are characters represented in computers?

14. What is an integer addition operation in computer arithmetic?

15. Define ripple carry adder?

16. What is the main drawback of a ripple carry adder?

17. What is a carry look-ahead adder?

18. State the advantage of a carry look-ahead adder?

19. Define Booth's multiplication algorithm?

20. What is a shift-and-add multiplication technique?

21. What is a carry-save multiplier?

22. Define division in computer arithmetic?

23. Differentiate between restoring and non-restoring division?

24. What is floating-point arithmetic?

25.   What is the x86 architecture?

26.   What are the two CPU control unit design approaches?

27.   Define a hardwired control unit?

28.   What is a microprogrammed control unit?

29.   Define memory organization?

30.   What are the types of semiconductor memory?

31.   Differentiate between RAM and ROM?

32.   What is cache memory?

33.   Define memory interleaving?

34.   What is memory hierarchy?

35.   What is an I/O subsystem?

36.   Name two types of I/O transfers?

37.   What is Direct Memory Access (DMA)?

38.   Differentiate between privileged and non-privileged instructions?

39.   What is a software interrupt?

40.   Define an exception in a computer system?

41.   What is the role of interrupts in process state transitions?

42.   What is SCSI?

43.   What is USB?

44.   Define pipelining in CPU architecture?

45.   What is pipeline speedup?

46.   What are pipeline hazards?

47.   Differentiate between data hazards and control hazards?

48.   What is cache coherence?

49.   What is concurrent memory access?

50.   Define write policies in cache memory?

Short Answer Type

1.   Explain the functional blocks of a computer?

2.   Describe the instruction execution cycle?

3.   Discuss different addressing modes with examples?

4.   Explain RTL interpretation of instructions?

5.   Describe the instruction set of the 8085 processor?

6.   Compare fixed and floating-point number representations?

7.   Explain signed and unsigned number representations?

8.   Describe integer addition and subtraction?

9.   Explain the working of a ripple carry adder with a diagram?

10.   Discuss the advantages and disadvantages of a carry look-ahead adder?

11.   Explain the Booth multiplication algorithm with an example?

12.   Discuss shift-and-add multiplication with an example?

13.   Explain carry-save multiplication with a diagram?

14.   Differentiate between restoring and non-restoring division?

15.   Explain floating-point arithmetic with an example?

16.   Describe the x86 architecture and its features?

17.   Differentiate between hardwired and microprogrammed control unit designs?

18.   Explain the design of a simple hypothetical CPU?

19.   Describe the types of semiconductor memory technologies?

20.   Explain the organization of memory in a computer system?

21.   Discuss the various types of I/O transfers?

22.   Explain interrupt-driven I/O with an example?

23.   Define DMA and explain how it works?

24.   Explain the difference between software interrupts and hardware interrupts?

25.   Discuss process state transitions and the role of interrupts?

26.   Describe the interface of an I/O device with an example?

27.   Explain how USB works as an I/O device interface?

28.   Describe SCSI and its applications?

29.   Explain the concept of pipelining in CPU architecture?

30.   Describe the benefits and challenges of pipeline execution?

31.   Explain different types of pipeline hazards with examples?

32.   Define throughput and speedup in pipelining?

33.   Discuss parallel processors and their applications?

34.   Explain cache coherence and its importance in multiprocessor systems?

35.   Describe the concept of memory interleaving?

36.   Explain the hierarchical organization of memory?

37.   Discuss cache size vs. block size and its impact on performance?

38.   Explain different cache mapping functions?

39.   Describe different cache replacement algorithms?

40.   Explain write policies in cache memory?

Long Answer Type

1.   Explain in detail the functional blocks of a computer with a neat diagram?

2.   Describe the instruction execution cycle with a detailed explanation?

3.   Discuss in detail different types of addressing modes with examples?

4.   Explain the instruction set of the 8085 processor with examples?

5.   Describe different types of data representation in computers?

6.   Explain integer addition and subtraction with proper examples?

7.   Compare ripple carry adder and carry look-ahead adder with circuit diagrams?

8.   Describe Booth's multiplication algorithm with step-by-step execution?

9.   Explain shift-and-add and carry-save multiplication with examples?

10.   Discuss division techniques, including restoring and non-restoring division, with examples?

11.   Explain floating-point arithmetic operations with examples?

12.   Discuss the x86 architecture and compare it with other architectures?

13.   Explain the design of a simple hypothetical CPU with a block diagram?

14.   Compare hardwired and microprogrammed control unit designs with examples?

15.   Discuss memory system design and different types of semiconductor memory?

16.   Explain different memory organizations and their advantages?

17.   Discuss different types of I/O transfers and their working mechanisms?

18.   Explain the role of interrupts in process state transitions with an example?

19.   Describe the USB and SCSI interfaces and compare them?

20.   Explain pipelining, its advantages, and different pipeline hazards?

21.   Discuss parallel processors and how they improve computational performance?

22.   Explain memory interleaving and its advantages?

23.   Describe hierarchical memory organization with a block diagram?

24.   Explain cache memory, mapping functions, and replacement algorithms?

25.   Compare different cache replacement algorithms with examples?

26.   Discuss cache coherence and concurrent memory access in multiprocessor systems?

27.   Explain different write policies in cache memory?

28.   Discuss the impact of cache size vs. block size on system performance?

29.   Explain the role of DMA in I/O device communication with a neat diagram?

30.   Compare and contrast software interrupts, exceptions, and privileged instructions?