



KINGS

COLLEGE OF ENGINEERING



DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK

Sub. Code & Name: CS2253 Computer organization and architecture

Year/Sem : II/IV

UNIT- I

BASIC STRUCTURE OF COMPUTERS

PART – A(2 Marks)

1. What are the registers generally contained in the processor?
2. Define interrupt and ISR.
3. Define Bus. What are the different buses in a CPU?
4. What is the use of buffer register?
5. Compare single bus structure and multiple bus structure.
6. What is System Software? Give an example.
7. What is Application Software?
8. What is a compiler?
9. What is text editor?
10. Discuss about OS as system software.
11. What is multiprogramming or multitasking?
12. What is elapsed time of computer system?
13. What is processor time of a program?
14. Write down the basic performance equation?
15. What is byte addressable memory?
16. What is big Endian and little Endian format?
17. What are condition code flags?

18. What are the commonly used condition code flags?
19. Define addressing mode.
20. What are the various addressing modes?
21. What are the four basic types of operations that need to be supported by an Instruction set?
22. What is assembler directive?
23. Define device interface.
24. Give an example each of zero- address, one-address, two-address and three-address instructions.
25. Give the symbol of a full adder circuit for a single stage addition and give the expression for sum.
26. What is n-bit ripple carry adder?
27. What are the 2 ways to detect overflow in an n-bit adder?
28. What are the two approaches to reduce delay in adders?
29. What is booth algorithm?
30. What are the two attractive features of Booth algorithm?
31. What are the two techniques for speeding up the multiplication operation?
32. How CSA speeds up multiplication.
33. Write down the steps for restoring division and non-restoring division.
34. What is the advantage of non restoring over restoring division?
35. Briefly explain the floating point representation with an example.
36. What are the exceptions encountered in FP operation?
37. What are guard bits?
38. What are the ways to truncate guard bits?

PART – B (16 Marks)

1. (a) Explain the Differences between CISC & RISC. (8)
(b) Explain the various Instruction types? (8)
2. Write in detail about various addressing modes. (16)
3. Explain the various generations of Computer (16)

4. (a) Explain the Booth's algorithm for multiplication of signed two's Complement numbers. (8)
- (b) Explain the multiple bus organization in detail. (8)
5. Explain the floating point addition and subtraction (16)
6. (a) State the Non – restoring division technique (8)
- (b) Draw and explain the flowchart of floating point addition process. (8)
7. Explain with a diagram the designs of a fast multiplier using carry save Adder circuit (16)
8. Give the block diagram for a floating point adder / sub tractor unit and discuss its operation (16)

UNIT-II

BASIC PROCESSING UNIT

PART – A(2 Marks)

1. Define data path.
2. What is known as multiphase clocking?
3. Define MFC.
4. What is WMFC?
5. What is mean by branch instruction?
6. Define register file.
7. What are the two approaches used for generating the control signals in Proper sequence?
8. What are the factors determine the control signals?
9. What are the features of the hardwired control?
10. What is micro programmed control?
11. What is control word?
12. Define micro routine and microinstruction.
13. What is control store?
14. Name some register output control signals.

15. What is vertical organization and horizontal organization?
16. Compare vertical organization and horizontal organization.
17. What is the drawback of micro programmed control?

PART-B (16 Marks)

1. Explain the concept of hardwired control unit (16)
2. Explain the concept of micro programmed control unit (16)
3. a. Sketch and explain the multiple bus organization (8)
b. Explain the execution of complete instruction (8)
4. Explain in detail about nano-programming (16)

UNIT – III

PIPELINING

PART-A (2 Marks)

1. Name the four steps in pipelining.
2. What is data hazard?
3. What are instruction hazards?
4. What are called stalls?
5. What is structural hazard?
6. What is said to be side effect?
7. What is branch folding?
8. Define speculative execution.
9. What is called static and dynamic branch prediction?
10. What are condition codes?
11. What are superscalar processors?
12. What is imprecise and precise exception?

PART-B(16 Marks)

1. Describe in detail about pipeline processing. (16)
2. a. Explain in detail about data hazards (10)
b. Briefly explain about different types of exception. (6)
3. Explain in detail about instruction hazards (16)
4. Explain in detail about the following
a) Influence on instruction set (8)
b) Data path considerations (8)

UNIT- IV

MEMORY SYSTEM

PART- A(2 Marks)

1. Define memory access time?
2. Define memory cycle time?
3. What is MMU?
4. Define static memories?
5. What are the Characteristics of semiconductor RAM memories?
6. What are the Characteristics of SRAMs?
7. What are the Characteristics of DRAMs?
8. Define Memory Latency.
9. What are asynchronous DRAMs?
10. What are synchronous DRAMs?
11. What is double data rate SDRAMs?
12. What are SIMMs and DIMMs?
13. What is memory Controller?
14. Differentiate static RAM and dynamic RAM.
15. What are RDRAMs?
16. What are the special features of Direct RDRAMs?
17. What are RIMMs?
18. Define ROM.

19. What are the features of PROM?
20. Define flash memory.
21. What is locality of reference?
22. What are the two aspects of locality of reference? Define them.
23. What are the two ways in which the system using cache can proceed for a write operation?
24. What is write through protocol?
25. What is write-back or copy back protocol?
26. What is load-through or early restart?
27. What are the types of mapping technique?
28. What is a hit? Define hit rate.
29. Define miss rate? Define miss penalty.
30. Define access time for magnetic disks.
31. What is the formula for calculating the average access time experienced by the processor?
32. What is the formula for calculating the average access time experienced by the processor in a system with two levels of caches?
33. What is virtual memory technique?

PART – B (16 Marks)

1. Illustrate the characteristics of some common memory technologies. (16)
2. (a) Describe in detail about associative memory. (8)
(b) Comparing paging and segmentation mechanisms for implementing the virtual memory. (8)
3. What is Memory Interleaving? Explain the addressing of multiple modules Memory system. (16)
4. Discuss the different mapping techniques used in cache memories and their relative merits and demerits. (16)

5. What do you mean by virtual memory? Discuss how paging helps in implementing virtual memory. (16)
6. (a) Discuss any six ways of improving the cache performance. (8)
- (b) Illustrate memory read and write operation. (8)

UNIT-V

I/O ORGANIZATION

PART-A(2Marks)

1. What is memory mapped I/O?
2. What is program controlled I/O?
3. What are the various mechanisms for implementing I/O operations?
4. What are vectored interrupts?
5. When the privilege exception arises?
6. What is time slicing?
7. What is DMA?
8. What is DMA controller?
9. What is cycle stealing?
10. What is bus arbitration?
11. What are the three types of buses?
12. What are the objectives of USB?
13. What is synchronous bus?
14. What is asynchronous bus?
15. What are the functions of typical I/O interface?

PART – B (16 Marks)

1. Explain with the block diagram the DMA transfer in a computer System. (16)
2. (a) Describe in detail about IOP organization. (8)
- (b) Describe the data transfer method using DMA. (8)

3. Write short notes on the following
 - (a) Magnetic disk drive (8)
 - (b) Optical drives (8)
4. Discuss the design of a typical input or output interface. (16)
5. What are interrupts? How are they handled? (16)