Define the following: a) Flynn's taxonomy b) Replacement algorithm

a) Flynn's Taxonomy

Flynn's Taxonomy is a classification system for computer architectures proposed by Michael J. Flynn in 1966. The taxonomy is based on the number of instruction streams and data streams that can be processed by a computer architecture.

The four categories in Flynn's taxonomy are:

- SISD (Single Instruction, Single Data): This is a traditional computer architecture that processes one instruction and one data item at a time. Examples of SISD systems include most personal computers.
- SIMD (Single Instruction, Multiple Data): This architecture processes multiple data items in parallel using a single instruction stream. Examples of SIMD systems include graphics processing units (GPUs) and digital signal processors (DSPs).
- MISD (Multiple Instruction, Single Data): This architecture processes a single data item with multiple instructions simultaneously. MISD architectures are rare and not widely used.
- MIMD (Multiple Instruction, Multiple Data): This architecture processes multiple data items and multiple instruction streams simultaneously. Examples of MIMD systems include multi-core processors and distributed computing systems.

b) Replacement algorithm

Replacement algorith is a technique used in computer memory management to determine which data to remove from memory when the memory is full and needs to make space for new data. The basic idea is to identify the data that is least likely to be used again in the near future and replace it with new data.

The most common replacement algorithms are:

- Least Recently Used (LRU): This algorithm removes the data that has not been accessed for the longest time.
- First-In-First-Out (FIFO): This algorithm removes the data that has been in memory for the longest time.
- Least-Frequently-Used (LFU): This algorithm removes the data that has been accessed the least number of times.
- Random: This algorithm randomly selects data to remove from memory.

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19. Write a short note on design of arithmetic unit ?
20. Write a short note on Array processors ?
21. Write a short note on LRU algorithm ?
22. What is the format of Micro Instruction in Computer Architecture explain ?
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25. What is Memory Organization ? Discuss different types of Memory Organization in Computer System.
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28. What is Multiprocessor ? Explain inter process communication in detail ?
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30. Discuss the following in detail: RISC architecture, Vector processing ?
31. Define the instruction format ? Explain I/O System in detail ?
32. Explain the design of arithmetic and logic unit by taking on example ?
33. Explain how addition and subtraction are performed in fixed point number ?
34. Explain different modes of data transfer between the central computer and I/O device ?
35. Differentiate between Serial and parallel data transfer ?
36. Explain signed magnitude, signed l's complement and signed 2's complement representation of numbers. Find the range of numbers in all three representations for 8 bit register.
37. If cache access time is lOOns, main memory access time is 1000 ns and the hit ratio is 0.9. Find the average access time and also define hit ratio.
38. Explain hardwired microprogrammed control unit ? What is address sequencer circuit ?

39. Explain how a stack organized computer executes instructions? What is Stack?
40. Draw and explain the memory hierarchy in a digital computer. What are advantages of cache memory over main memory?
41. What is Associative memory? Explain the concept of address space and memory space in Virtual memory.
42. What is Paging? Explain how paging can be implemented in CPU to access virtual memory.
43. Explain SIMD array processor along with its architectural diagram ?
44. Write short notes on
45. Draw the functional and structural views of a computer system and explain in detail ?
46. Explain general register organization.
47. Compare and contrast DMA and I/O processors ?
48. Explain the various pipeline vector processing methods ?
49. Describe the language features for parallelism ?
50. What are different addressing modes? Explain them.
51. Explain any page replacement algorithm with the help of example ?
52. What is mapping? Name all the types of cache mapping and explain anyone in detail.
53. Explain arithmetic pipeline ?
54. Write short notes on, a) SIMD, b) Matrix multiplication c) Instruction format
55. Differentiate: a) Maskable and non-maskable interrupt b) RISC and CISC
56. Computer Organization Previous Years Solved Questions
57. Booths algorithm to muliyiply +5 and -15