**MASTER OF COMPUTER APPLICATION (MCA)**

**DCA6105 - COMPUTER ARCHITECTURE**

**Assignment Set- 1st**

**1 What do you understand by parallelism in computer architecture? Discuss the different classes of parallelism and parallel architectures?**

**Ans: Introduction:** A parallel computer is a set of processors that are able to work cooperatively to solve a computational problem. This definition broadly includes parallel supercomputers that have more than hundreds of processors, networks of workstations, embedded systems and multipleprocessor workstations. Parallel computers have the potential to concentrate computational resources like processors, memory, or I/O bandwidth on important computational

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**2. Describe the instruction cycle and its various phases.**

**Ans: Introduction:** An instruction cycle refers to the processing needed for a single instruction (fetch and execution). The instruction cycle consist of the fetch cycle and the execute cycle.

**Content**: Program execution comes to an end if:

* The electric power supply is stopped or
* Any irrecoverable error occurs, or
* When a program

**3. What do you understand by pipelining? Recommend any real scenario where the pipeline concept can be applied.**

**Ans: Introduction:** An implementation technique by which the execution of multiple instructions can be overlapped is called pipelining. In other words, it is a method which breaks down the sequential process into numerous sub–operations. Then every sub-operation is concurrently executed in dedicated segments separately. The main advantage of pipelining is that it increases the instruction throughput, which is specified the count of instructions completed per unit time. Thus, a

**Assignment Set – 2**

**1. What do you understand by Memory-Hierarchy? Discuss the types of Memory Hierarchy**

**Ans: Introduction:** The Computer memory hierarchy looks like a pyramid structure which is used to describe the differences among memory types. It separates the computer storage based on hierarchy.

**Content:**

**2. What do you understand by Parallel Processing? Also, explain Serial Processor and True Parallel Processor.**

**Ans: Introduction:** Parallel processing is basic part of our everyday life. The concept of parallel processing is so natural in our life that we use it without even realising. When we face some crisis, we take help from others and involve them to solve it more easily. This cooperation of using two or more helpers to make easy the solution of some problem may be termed parallel processing.

Content: A serial processor is **a processor type used by systems where the central processing unit (CPU) carries out**

**3. Summarize the usage of Cache Only Memory Access (COMA) and Non-uniform Memory Access (NUMA) in the following circumstances**

**a. Global Address Space usage**

**Ans:** All the memory locations can be accessed by CPU clearly. In local memories of multi-computers, the address space is duplicated in the processing elements. This dissimilarity in the memory’s address space is all well showed in software level. NUMA machines programming depends on the global address space (shared memory) principle while distributed memory multi-computers programming