**Operating System (CS-33101)**
**MCA – 3<sup>rd</sup> Semester**
**Assignment 1**

**Q.1.** If a computer has a very fast CPU but a small memory, few computer programs can fit into its memory at any time and consequently the CPU is often idle because of lack of work. Swapping is a technique of removing an inactive program from memory and loading a program that requires use of the CPU in its place so that the CPU can service it. Does swapping improve (a) user service and (b) efficiency of use? What is its effect on OS overhead?

**Q.2.** Give two reasons why caches are useful. What problems do they solve? What problems do they cause? If a cache can be made as large as the device for which it is caching (for instance, a cache as large as a disk), why not make it that large and eliminate the device?

**Q.3.** Would it be possible for the user to develop a new command interpreter using the system-call interface provided by the operating system?

**Q.4.** List the differences between a kernel employing dynamically loadable modules and (a) a monolithic kernel and (b) a microkernel

**Q.5.** The CPU of a multiprogramming system is executing a high-priority program when an interrupt signaling completion of an I/O operation occurs. Show all actions and activities in the OS following the interrupt if
(a) The I/O operation was started by a lower-priority program
(b) The I/O operation was started by a higher-priority program.
Illustrate each case with the help of a timing chart.