**MID TERM TOPICS**

1. OS definition
2. OS evolution – Batch- Multiprogramming –Time Sharing
3. Computer System evolution
4. Multicore – Multiprocessing –Multithreading
5. CISC vs RISC processors
6. OS Components
7. OS Kernel structures
   1. Monolithic
   2. Microkernel
   3. Modules
   4. Layered approach
8. OS modes
   1. User
   2. Kernel
   3. Privilege Instructions
9. OS start-up/ Shutdown process
   1. Boot process – Linux and Windows
   2. Bootloader
10. OS Services
11. User Interface
    1. CLI
    2. GUI
    3. Shell --Interpreter
    4. Windows Registry and WMI
    5. Shell – Parent/child
12. System calls and programming
    1. Definition
    2. System calls types e.g write(), read(), execvp()…..
    3. Compiler, interpreter , debugger
    4. API and Libraries DLL
13. Process Management
    1. Processes management functions
    2. Processes attributes
    3. Processes and Threads
    4. PCB
    5. Process Resources
    6. Process Types
    7. Process memory address space
    8. Processes and signals
    9. Signals programming and system calls
    10. Process states and queues
    11. Process context -switch
    12. Windows and Linux Process creation and termination
    13. Process communication techniques -IPCs
    14. Parent/ Child process relationship
14. Process Scheduling
    1. Scheduler – Short and long term scheduler
    2. CPU and I/O bound differences
    3. Processes states and queues
    4. Scheduling algorithms
    5. Scheduling criteria
    6. Linux scheduling
    7. Windows process/threads scheduling
15. Process programming and system calls
    1. Differences and functions of the system calls fork() (clone), wait() , execvp(),read(),write(), open(),getpid()…