INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

INFORMATION TECHNOLOGY

DEFINITIONS AND TERMINOLOGY

Course Name	:	**OPERATING SYSTEMS**
Course Code	:	**AITB04**
Program	:	**B.Tech**
Semester	:	**IV**
Branch	:	**Computer Science and Engineering**
Section	:	**A,B,C,D**
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COURSE OBJECTIVES (COs):

The course should enable the students to:	
I	Understand the fundamental principles of the operating system, its services and Functionalities.
II	Illustrate the concepts of processes, inter-process communication, synchronization and scheduling.
III	Understand different types of memory management viz. virtual memory, paging and segmentation.

	IV	Identify the reasons for deadlock and understand the techniques for deadlock detection, prevention and recovery.
	V	Understand the need of protection and security mechanisms in computer systems.

DEFINITIONS AND TERMINOLOGYQUESTION BANK

S No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		UNIT - I				
1	Define system call?	In computing, a system call is the programmatic way in which a computer program requests a service from the kernel of the operating system it is executed on. System calls provide an essential interface between a process and the operating system.	Remember	CO 1	CLO04	AITB04.04
2	Define Real Time Systems?	A real time system is a time bound system which has well defined fixed time constraints. Processing must be done within the defined constraints or the system will fail. They either are event driven or timesharing	Remember	CO 1	CLO 03	AITB04.03
3	Define job scheduling?	The allocation of system resources to various tasks, known as job scheduling, is a major assignment of the operating system.	Remember	CO 1	CLO08	AITB04.08
4	State user mode and kernel mode?	Kernel mode is generally reserved for the lowest-level, most trusted functions of the operating system. Crashes in kernel mode are catastrophic; they will halt the entire PC. In User mode, the executing code has no ability to directly access hardware or reference memory	Understand	CO 1	CLO04	AITB04.04
4	What is multi tasking	Multitasking, in an operating system, is allowing a user to perform more than one computer task (such as the operation of an application program) at a time.	Remember	CO 1	CLO03	AITB04.03
5	What is resource allocator?	When multiple users or multiple jobs running concurrently, resources must be	Remember	CO 1	CLO04	AITB04.04
6	What is spooling?	Spooling is a process in which data is temporarily held to be used and executed by a device, program or the system. Data is sent to and stored in memory or other volatile storage until the program or computer requests it for execution. "Spool" is technically an acronym for simultaneous peripheral operations online	Remember	CO 1	CLO03	AITB04.03
7	List out the functions that comes in file management?	Create, delete, copy, rename, print, dump, list, and generally manipulate files and directories	Remember	CO 1	CLO04	AITB04.04

8	Define multi programming?	A multiprogramming is a parallel processing in which the multiple programs can run simultaneously. Multiprogramming allows using the CPU effectively by allowing various users to use the CPU and I/O devices effectively. Multiprogramming makes sure that the CPU always has something to execute, thus increases the CPU utilization.	Remember	CO 1	CLO03	AITB04.03
9	What is time sharing	Time-sharing is a technique which enables many people, located at various terminals, to use a particular computer system at the same time. Time-sharing or multitasking is a logical extension of multiprogramming. Processor's time which is shared among multiple users simultaneously is termed as time-sharing.	Remember	CO 1	CLO03	AITB04.03
10	Define Hard real – Time System.	A Hard Real-Time System guarantees that critical tasks complete on time	Remember	CO 1	CLO 03	AITB04.03
12	Define GUI?	The graphical user interface is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation.	Remember	CO 1	CLO03	AITB04.03
13	Define batch operating system?	In batch operating system user do not interact with the computer directly. Each user prepares his job on an off-line device like punch cards and submits it to the computer operator. To speed up processing, jobs with similar needs are batched together and run as a group.	Remember	CO 1	CLO03	AITB04.03
14	Define CLI	Command line interface (CLI) is a text-based interface that is used to operate software and operating systems while allowing the user to respond to visual prompts by typing single commands into the interface and receiving a reply in the same way	Remember	CO 1	CLO03	AITB04.03
15	What is protection and security	The owners of information stored in a multiuser or networked computer system may want to control use of that information, concurrent processes should not interfere with each other	Remember	CO 1	CLO05	AITB04.05
16	Define operating system	An operating system is system software that manages computer hardware and software resources and provides common services for computer programs.	Remember	CO 1	CLO 01	AITB04.01
17	Define Spooling	Spooling refers to putting data of various I/O jobs in a buffer. This buffer is a special area in memory or hard disk which is accessible to I/O devices.	Remember	CO 1	CLO03	AITB04.03
18	Define multiprocessing systems	Each processor assigned a specific task and uses master – slave relationship.	Remember	CO 1	CLO 10	AITB04.10

19	Define clustered systems	A group of computer system connected with a high speed communication link, each computer system has its own memory and peripheral devices.	Remember	CO 1	CLO 14	AITB04.14
20	Define microkernel	Microkernel is a small os that provides the foundation for modular extensions and a communication facility between the client program and the various services that are also running in user space.	understand	CO 1	CLO04	AITB04.04
21	Define control program.	A control program controls the execution of user programs to prevent errors and improper use of the computer	Remember	CO 1	CLO05	AITB04.05
22	What is Kernel?	The kernel is the core of the operating system, providing operating system services to applications programs; A kernel is the central part of an operating system. It manages the operations of the computer and the hardware - most notably memory and CPU time	Remember	CO 1	CLO 09	AITB04.09
23	Define Job scheduling	The allocation of system resources to various tasks, known as job scheduling, is a major assignment of the operating system	Remember	CO 1	CLO 08	AITB04.08
24	Define Process Management	A process is a program in execution. It is a unit of work within the system. Program is a passive entity, process is an active entity	Remember	CO 1	CLO 08	AITB04.08
25	Define Resource allocation	When multiple users or multiple jobs running concurrently, resources must be allocated to each of them	Remember	CO 1	CLO 02	AITB04.02
26	Define Booting	Booting is a startup sequence that starts the operating system of a computer when it is turned on. A boot sequence is the initial set of operations that the computer performs when it is switched on	Remember	CO 1	CLO03	AITB04.04
27	Define system call	system call defined as request to the operating system to allow user to wait for I/O completion	Remember	CO 1	CLO04	AITB04.04
28	Define process	A program under execution is called process	Remember	CO 1	CLO04	AITB04.04
29	Define tracking	To keep track of which users use how much and what kinds of computer resources	Remember	CO 1	CLO15	AITB04.15
30	Define multiprocessor	Multiprocessor system means more than one processor in close communication, all the processor share common bus, clock, memory and peripheral devices.. multiprocessor	Remember	CO 1	CLO03	AITB04.03
31	Define layered structure	layered structure operating systems were developed in which functions are organized hierarchically and interaction only take place in adjacent layer	Remember	CO 1	CLO 13	AITB04.13
UNIT – II						

1	Define Time Slice?	time slice. A short interval of time allotted to each user or program in a multitasking or timesharing system. Time slices are typically in milliseconds.	Remember	CO 2	CLO 07	AITB04.07
2	Define Scheduling Queue?	The OS maintains all PCBs in Process Scheduling Queues.ueue − This queue keeps all the processes in the system. Ready queue − This queue keeps a set of all processes residing in main memory, ready and waiting to execute.	Remember	CO 2	CLO 08	AITB04.08
3	Define preemptive scheduling?	A scheduling discipline is preemptive if, once a process has been given the CPU can taken away. The strategy of allowing processes that are logically runnable to be temporarily suspended is called Preemptive Scheduling and it is contrast to the "run tocompletion" method.	Remember	CO 2	CLO 08	AITB04.08
4	Define thread?	The implementation of threads and processes differs between operating systems, but in most cases a thread is a component of a process. Multiple threads can exist within one process, executing concurrently and sharing resources such as memory, while different processes do not share these resources	Remember	CO 2	CLO 04	AITB04.04
5	Define Peterson's algorithm?	Peterson's algorithm (or Peterson's solution) is a concurrent programming algorithm for mutual exclusion that allows two or more processes to share a single-use resource without conflict, using only shared memory for communication.	Remember	CO 2	CLO 08	AITB04.08
6	What is context switching?	Context switch is a procedure that a computer's CPU (central processing unit) follows to change from one task (or process) to another while ensuring that the tasks do not conflict. Effective context switching is critical if a computer is to provide user-friendly multitasking	Remember	CO 2	CLO 08	AITB04.08
7	What is semaphores	Semaphore is a synchronization mechanism. so synchronization allows two or more processes or threads to communicate in a useful way. specifically a semaphore consists of an integer variables.	Remember	CO 2	CLO 10	AITB04.10
8	Define PCB	Process Control Block (PCB, also called Task Controlling Block, Entry of the Process Table, Task struct, or Switch Frame) is a data structure in the operating system kernel containing the information needed to manage the scheduling of a particular process.	Remember	CO 2	CLO 09	AITB04.09
9	Define CPU scheduler	CPU Scheduler Whenever the CPU becomes idle, it is the job of the CPU Scheduler to select another process from the ready queue to run next.	Remember	CO 2	CLO 08	AITB04.08

10	What is process scheduling?	Process scheduling is the activity of the process manager that handles the removal of the running process from the CPU and the selection of another process on the basis of a particular strategy. Process scheduling is an essential part of a Multiprogramming operating systems	Remember	CO 2	CLO 09	AITB04.09
11	Define scheduling?	Scheduling is the method by which work specified by some means is assigned to resources that complete the work. The work may be virtual computation elements such as threads, processes or data flows, which are in turn scheduled onto hardware resources such as processors, network links or expansion cards.	Remember	CO 2	CLO 08	AITB04.08
12	What is multi processor scheduling?	multiple CPUs are available and hence Load Sharing becomes possible. However multiple processor scheduling is more complex as compared to single processor scheduling.	Remember	CO 2	CLO 10	AITB04.10
13	Define real time scheduling system?	Real-time scheduling System is composed of the scheduler, clock and the processing hardware elements. In a real-time system, a process or task has schedulability; tasks are accepted by a real-time system and completed as specified by the task deadline depending on the characteristic of the scheduling algorithm.	Remember	CO 2	CLO 08	AITB04.08
14	What is critical section?	Critical section is a code segment that accesses shared variables and has to be executed as an atomic action. The critical section problem refers to the problem of how to ensure that at most one process is executing its critical section at a given time.	Remember	CO 2	CLO 07	AITB04.07
15	Define process?	Process is the instance of a computer program that is being executed. It contains the program code and its activity. Depending on the operating system (OS), a process may be made up of multiple threads of execution that execute instructions concurrently. Each CPU (core) executes a single task at a time	Remember	CO 2	CLO 09	AITB04.09
16	Define Program counter	Program counter defined as the counter indicates the address of the next instruction to be executed for this process	Remember	CO 2	CLO 09	AITB04.09
17	Define device queue	Device queue defined as The list of processes waiting for a particular I/O device is called a device queue.	Remember	CO 2	CLO 08	AITB04.08
18	Define short-term scheduler	The short-term scheduler selects from among the processes that are ready to execute/and allocates the CPU to one of them.	Remember	CO 2	CLO 08	AITB04.08

19	Define Swapping	the process can be reintroduced into memory and its execution can be continued where it left off. This scheme is called swapping	Remember	CO 2	CLO 04	AITB04.04
20	Define process terminates	A process terminates when it finishes executing its last statement and asks the operating system to delete it by using the exit system call.	Remember	CO 2	CLO 10	AITB04.10
21	Define unidirectional	The definition of unidirectional is a link may be associated with more than two processes run next	Remember	CO 2	CLO 08	AITB04.08
22	Define shared-memory	The shared-memory method requires communicating processes to share some variables.	Remember	CO 2	CLO 07	AITB04.07
23	Define Turnaround time	The interval from the time of submission of a process to the time of completion is. The Turnaround time.	Remember	CO 2	CLO 10	AITB04.10
24	Define Waiting time	Waiting time is the sum of the periods spent waiting in the ready queue	Remember	CO 2	CLO 08	AITB04.08
25	Define Starvation	Starvation. A process that is ready to run but lacking the CPU can be considered blocked ,waiting for CPU	Remember	CO 2	CLO 08	AITB04.08
26	What is time quantum	A small unit of time, called a time quantum, or time slice, is defined. A time quantum is generally from 10 to 100 milliseconds.	Remember	CO 2	CLO 08	AITB04.08
27	Define Race cooperating process	A cooperating process is one that can affect or be affected by the other processes executing in the system	Remember	CO 2	CLO 10	AITB04.10
28	Define long-term scheduler	long-term scheduler defined as selects which process has to be brought into the ready queue.	Remember	CO 2	CLO 08	AITB04.08
29	Define Priority inversion	When high priority task is indirectly preempted by medium priority task effectively inverting the relative priority of the two tasks	Remember	CO 2	CLO 08	AITB04.08
30	Define Throughput	The number of processes completed per unit time	Remember	CO 2	CLO 10	AITB04.10
31	Define race condition	Where several processes access and manipulate the same data concurrently, and the outcome of the execution depends on the particular order in which the access takes place, is called a race condition	Remember	CO 2	CLO 08	AITB04.08
UNIT – III						
1	Define frames?	A frame refers to a storage frame or central storage frame. In terms of physical memory, it is a fixed sized block in physical memory space, or a block of central storage. In computer architecture, frames are analogous to logical address space pages.	Remember	CO 3	CLO 13	AITB04.13

2	What is hashed page tables	The virtual page number is hashed into a page table This page table contains a chain of elements hashing to the same location Virtual page numbers are compared in this chain searching for a match If a match is found, the corresponding physical frame is extracted	Remember	CO 3	CLO 14	AITB04.14
3	Define segmentation?	Segmentation is one of the most common ways to achieve memory protection. In a computer system using segmentation, an instruction operand that refers to a memory location includes a value that identifies a segment and an offset within that segment.	Remember	CO 3	CLO 11	AITB04.11
4	What is page replacement?	Page replacement In a computer operating system that uses paging for virtual memory management, page replacement algorithms decide which memory pages to page out, sometimes called swap out, or write to disk, when a page of memory needs to be allocated	Remember	CO 3	CLO 13	AITB04.13
5	Define page table?	Page Table is a data structure used by the virtual memory system to store the mapping between logical addresses and physical addresses. Logical addresses are generated by the CPU for the pages of the processes therefore they are generally used by the processes.	Remember	CO 3	CLO 13	AITB04.13
6	What is physical address?	Physical address is a location that exists in the memory unit. The set of all logical addresses generated by CPU for a program is called Logical Address Space. However, the set of all physical address mapped to corresponding logical addresses is referred as Physical Address Space.	Remember	CO 3	CLO11	AITB04.11
7	Define Swapping?	Swapping is mechanisms in which a process can be swapped temporarily out of main memory (or move) to secondary storage (disk) and make that memory available to other processes.	Remember	CO 3	CLO 14	AITB04.14
8	Define demand paging?	Demand paging is way of using virtual memory to give processes the illusion of infinite available memory Once a page is brought from disk into memory, the OS updates the page table and the valid bit. For efficiency reasons, memory accesses must reference pages that are in memory the vast majority of time	Remember	CO 3	CLO 13	AITB04.13
9	What is hierarchical page table	Break up the logical address space into multiple page tables A simple technique is a two-level page table	Remember	CO 3	CLO11	AITB04.11
10	What is allocation of frames?	Allocation of frames. An important aspect of operating systems, virtual memory is implemented using demand paging Frame allocation algorithms are used if you	Remember	CO 3	CLO14	AITB04.14

		have multiple processes; it helps decide how many frames to allocate to each process.				
11	Define trashing?	Trashing In a virtual storage system (an operating system that manages its logical storage or memory in units called pages), thrashing is a condition in which excessive paging operations are taking place. A system that is thrashing can be perceived as either a very slow system or one that has come to a halt.	Remember	CO 3	CLO 13	AITB04.13
12	What is memory protection?	Memory protection implemented by associating protection bit with each frame Valid- invalid bit attached to each entry in the page table	Remember	CO 3	CLO11	AITB04.11
13	Define contiguous memory allocation?	Contiguous memory allocation is one of the oldest memory allocation schemes. When a process needs to execute, memory is requested by the process. The size of the process is compared with the amount of contiguous main memory available to execute the process.	Remember	CO 3	CLO 11	AITB04.11
14	What is paging?	Paging is a memory management scheme that eliminates the need for contiguous allocation of physical memory. This scheme permits the physical address space of a process to be non – contiguous.	Remember	CO 3	CLO 14	AITB04.14
15	Define virtual memory?	Virtual memory is a memory management capability of an operating system (OS) that uses hardware and software to allow a computer to compensate for physical memory shortages by temporarily transferring data from random access memory (RAM) to disk storage	Remember	CO 3	CLO 11	AITB04.11
16	Define halving	If global depth is more than local depth then operation must be performed in directory array	Remember	CO 3	CLO11	AITB04.11
17	Define Blocks	Blocks are small fixed portions which provide greater flexibility which may require large tables or complex structures for their allocation	Remember	CO 3	CLO 13	AITB04.13
18	Define a logical address	An address generated by the CPU is commonly referred to as a logical address	Remember	CO 3	CLO 14	AITB04.14

S No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
19	Define paging	Paging is a memory management scheme that eliminates the need for contiguous allocation of physical memory.	Remember	CO 3	CLO 14	AITB04.14
20	What is roll out, roll in?	When the higher-priority process finishes, the lower-priority process can be swapped back in and continued. This variant of swapping is sometimes called roll out, roll in.	Remember	CO 3	CLO 11	AITB04.11
21	What is First-fit	: Allocate the first hole that is big enough. Searching can start either at the beginning of the set of holes or where the previous first-fit search ended. We can stop searching as soon as we find a free hole that is large enough.	Remember	CO 3	CLO 11	AITB04.11
22	Define internal fragmentation	internal fragmentation is memory that is internal to a partition, but is not being used.	Remember	CO 3	CLO 13	AITB04.13
23	Define Worst-fit	Allocate the largest hole. Again, we must search the entire list, unless it is sorted by size. This strategy produces the largest leftover hole, which may be more useful than the smaller leftover hole from a best-fit Approach.	Remember	CO 3	CLO11	AITB04.11
24	What is frame?	Physical memory is broken into fixed-sized blocks called frames	Remember	CO 3	CLO 11	AITB04.11
25	Define hashed page tables	The virtual page number is hashed into a page table This page table contains a chain of elements hashing to the same location Virtual page numbers are compared in this chain searching for a match If a match is found, the corresponding physical frame is extracted.	Remember	CO 3	CLO 14	AITB04.14
26	What is page replacement?	Page replacement In a computer operating system that uses paging for virtual memory management, page replacement algorithms decide which memory pages to page out, sometimes called swap out, or write to disk, when a page of memory needs to be allocated	Remember	CO 3	CLO 13	AITB04.13
27	What is page table?	The page table contains the base address of each page in physical memory.	Remember	CO 3	CLO14	AITB04.14
28	Define frames	A frame refers to a storage frame or central storage frame. In terms of physical memory, it is a fixed sized block in physical memory space, or a block of central storage. In computer architecture, frames are analogous to logical address space pages.	Remember	CO 3	CLO 13	AITB04.13
29	Define memory protection	Memory protection implemented by associating rotection bit with each frame Valid- invalid bit attached to each entry in the page table.	Remember	CO 3	CLO11	AITB04.11

30	Define hierarchical page table	Break up the logical address space into multiple page tables A simple technique is a two-level page table	Remember	CO 3	CLO11	AITB04.11
		UNIT - IV				
1	Define scan?	The disk arm starts at one end of the disk, and moves toward the other end, servicing requests until it gets to the other end of the disk	Remember	CO 4	CLO 15	AITB04.15
2	Define C LOOK	Version of C-SCAN Arm only goes as far as the last request in each direction, then reverses direction immediately, without first going all the way to the end of the disk	Remember	CO 4	CLO 15	AITB04.15
3	Define swap?	Space Management Swap-space — Virtual memory uses disk space as an extension of main memory	Remember	CO 4	CLO 15	AITB04.15
4	Define stream?	a full-duplex communication channel between a user-level process and a device in Unix System V and beyond	Remember	CO 4	CLO 12	AITB04.12
5	List out the access methods?	The access methods are sequential access and direct access	Remember	CO 4	CLO 13	AITB04.13
6	Define file attributes?	File attributes are settings associated with computer files that grant or deny certain rights to how a user or the operating system can access that file. For example, IBM compatible computers running MS-DOS or Microsoft Windows have capabilities of having read, archive, system, and hidden attributes.	Remember	CO 4	CLO 19	AITB04.19
7	Define disk structure?	The actual physical details of a modern hard disk may be quite complicated. Simply, there are one or more surfaces, each of which contains several tracks, each of which is divided into sectors. There is one read/write head for every surface of the disk.	Remember	CO 4	CLO15	AITB04.15
8	Define directory structure?	A directory is a container that is used to contain folders and file. It organizes files and folders into hierarchical manner	Remember	CO 4	CLO 12	AITB04.12
9	List out the file operations?	File Operations File is an abstract data type Create ,Write , Read , Reposition within file, Delete	Remember	CO 4	CLO 19	AITB04.19
10	Define attachment host?	attached storage accessed through I/O ports talking to I/O busses	Remember	CO 4	CLO 13	AITB04.13
11	Define Hierarchical Storage Management	A hierarchical storage system extends the storage hierarchy beyond primary memory and secondary storage to incorporate tertiary storage	Remember	CO 4	CLO 19	AITB04.19
12	Define sequential access	It is built on top of Sequential access. It uses an Index to control the pointer while accessing files.	Remember	CO 4	CLO 15	AITB04.15
13	Define c scan?	Provides a more uniform wait time than SCAN The head moves from one end of the disk to the other, servicing requests as it goes	Remember	CO 4	CLO 13	AITB04.13

14	Define SSTF	Shortest seek first (or shortest seek time first) is a secondary storage scheduling algorithm to determine the motion of the disk's arm and head in servicing read and write requests.	Remember	CO 4	CLO 13	AITB04.13
15	Define file?	A file is a named collection of related information that is recorded on secondary storage such as magnetic disks, magnetic tapes and optical disks.	Remember	CO 4	CLO 19	AITB04.19
16	Define starvation	A problem encountered in multitasking when a process is perpetually denied necessary resources	Remember	CO 4	CLO11	AITB04.11
17	Define text file	A text file is a sequence of characters organized into lines	Remember	CO 4	CLO 15	AITB04.15
18	What is file pointer?	On systems that do not include a file offset as part of the read and write system calls, the system must track the last read/write location as a current-file-position pointer.	Remember	CO 4	CLO 19	AITB04.19
19	What is Disk location of the file ?	Disk location of the file. Most file operations require the system to modify data within the file. The information needed to locate the file on disk is kept in memory to avoid having to read it from disk for each operation	Remember	CO 4	CLO 19	AITB04.19
20	Define stream	A full-duplex communication channel between a user-level process and a device in Unix System V and beyond	Remember	CO 4	CLO 12	AITB04.12
21	What is memory mapping?	a file among several processes, and even to map sections of a file into memory on virtual-memory systems. This last function is called memory mapping	Remember	CO 4	CLO15	AITB04.15
22	Define file	A file is a named collection of related information that is recorded on secondary storage such as magnetic disks, magnetic tapes and optical disks.	Remember	CO 4	CLO 19	AITB04.19
23	Define logical file	The logical file system uses the directory structure to provide the file organization module with the information the latter needs, given a symbolic file name	Remember	CO 4	CLO 15	AITB04.15
24	What is contiguous allocation of file?	The contiguous allocation method requires each file to occupy a set of contiguous Blocks on the disk. Disk addresses define a linear ordering on the disk	Remember	CO 4	CLO 13	AITB04.13
25	What is index block	Each file has its own index block, which is an array of disk-block addresses. The ith entry in the index block points to the fth block of the file.	Remember	CO 4	CLO 15	AITB04.15
26	Define Linked scheme	Linked scheme. An index block is normally one disk block. it can be read and written directly by itself	Remember	CO 4	CLO 13	AITB04.13
27	What is Swap-space management	Swap-space management is another low-level task of the operating system. Virtual memory uses disk space as an extension of main memory	Remember	CO 4	CLO 13	AITB04.13
28	Define text pages	swap space is allocated to a process when the process is started. Enough space is set aside to hold the program, known as the text pages	Remember	CO 4	CLO 13	AITB04.13

29	Define directory structure	A directory is a container that is used to contain folders and file. It organizes files and folders into hierarchical manner	Remember	CO 4	CLO 12	AITB04.12
30	What is List a directory?	List a directory. We need to be able to list the files in a directory, and the contents of the directory entry for each file in the list	Remember	CO 4	CLO 15	AITB04.15
UNIT - V						
1	Define access matrix?	the model of protection that we have been discussing can be viewed as an access matrix, in which columns represent different system resources and rows represent different protection domains. Entries within the matrix indicate what access that domain has to that resource.	Remember	CO 5	CLO 20	AITB04.21
2	What is mutual exclusion?	A mutual exclusion (mutex) is a program object that prevents simultaneous access to a shared resource. This concept is used in concurrent programming with a critical section, a piece of code in which processes or threads access a shared resource.	Remember	CO 5	CLO 20	AITB04.24
3	Define access control?	Access control is a way of limiting access to a system or to physical or virtual resources. In computing, access control is a process by which users are granted access and certain privileges to systems, resources or information	Remember	CO 5	CLO 20	AITB04.21
4	What is Non preemption?	a resource can be released only voluntarily by the process holding it, after that process has completed its task	Remember	CO 5	CLO 20	AITB04.24
5	Define circular wait?	a total ordering of all resource types, and require that each process requests resources in an increasing order of enumeration	Remember	CO 5	CLO 20	AITB04.24
6	What is safe state?	When a process requests an available resource, system must decide if immediate allocation leaves the system in a safe state	Remember	CO 5	CLO 20	AITB04.21
7	Define hold and wait?	a process holding at least one resource is waiting to acquire additional resources held by other processes	Remember	CO 5	CLO20	AITB04.21
8	Define dead lock detection?	Temporarily prevent resources from deadlocked processes. Back off a process to some check point allowing preemption of a needed resource and restarting the process at the checkpoint later. Successively kill processes until the system is deadlock free	Remember	CO 5	CLO 20	AITB04.21
9	Define clocks and timer?	Provide current time, elapsed time, timer Programmable interval timer used for timings, periodic interruptsnioctl() (on UNIX) covers odd aspects of I/O such as clocks and timers	Remember	CO 5	CLO 19	AITB04.21
10	Define stream	a full-duplex communication channel between a user-level process and a device in Unix System V and beyond	Remember	CO 5	CLO 20	AITB04.22

11	Define banker's algorithm?	Multiple instances Each process must a priori claim maximum use When a process requests a resource it may have to wait When a process gets all its resources it must return them in a finite amount of time	Remember	CO 5	CLO 20	AITB04.21
12	Define DMA?	Used to avoid programmed I/O for large data movement Requires DMA controller Bypasses CPU to transfer data directly between I/O device and memory	Remember	CO 5	CLO 19	AITB04.23
13	Define deadlock?	A deadlock is a situation in which two computer programs sharing the same resource are effectively preventing each other from accessing the resource, resulting in both programs ceasing to function	Remember	CO 5	CLO 20	AITB04.21
14	What is error handling?	Error Handling OS can recover from disk read, device unavailable, transient write failures Most return an error number or code when I/O request fails System error logs hold problem reports	Remember	CO 5	CLO 20	AITB04.23
15	Define dead lock detection	Temporarily prevent resources from deadlocked processes. Back off a process to some check point allowing preemption of a needed resource and restarting the process at the checkpoint later.	Remember	CO 5	CLO 13	AITB04.13
16	Define stream	A stream is a full-duplex connection between a device driver and a user-level process	Remember	CO 5	CLO 12	AITB04.12
17	Define access control	Access control is a way of limiting access to a system or to physical or virtual resources. In computing, access control is a process by which users are granted access and certain privileges to systems, resources or information	Remember	CO 5	CLO 19	AITB04.19
18	What is access Matrix?	Each entry in the matrix consists of a set of access rights. Because objects are defined explicitly by the column, we can omit the object name from the access right	Remember	CO 5	CLO 12	AITB04.12
19	What is access-control?	access-control mechanism for distributing capabilities to system resources among user processes	Remember	CO 5	CLO15	AITB04.15
20	Define Best-fit	Allocate the smallest hole that is big enough. We must search the entire list, unless the list is kept ordered by size. This strategy produces the smallest leftover hole	Remember	CO 5	CLO 15	AITB04.15
21	What is external fragmentation?	External fragmentation exists when enough total memory space exists to satisfy a request, but it is not contiguous	Remember	CO 5	CLO 15	AITB04.15
22	What is need-to-know principle	at any time, it should be able to access only those resources that it currently requires to complete its task. This requirement, commonly referred to as the need-to-know principle	Remember	CO 5	CLO 13	AITB04.13

23	What is protection domain	A process operates within a protection domain, which specifies the resources that the process may access. Each domain defines a set of objects and the types of operations that may be invoked on each object	Remember	CO 5	CLO 15	AITB04.15
24	Define access matrix	The model of protection that we have been discussing can be viewed as an access matrix, in which columns represent different system resources and rows represent different protection domains. Entries within the matrix indicate what access that domain has to that resource.	Remember	CO 5	CLO 13	AITB04.13
25	Define deadlock	A deadlock is a situation in which two computer programs sharing the same resource are effectively preventing each other from accessing the resource, resulting in both programs ceasing to function	Remember	CO 5	CLO11	AITB04.11
26	Define mutual exclusion	A mutual exclusion (Mutex) is a program object that prevents simultaneous access to a shared resource. This concept is used in concurrent programming with a critical section, a piece of code in which processes or threads access a shared resource.	Remember	CO 5	CLO 15	AITB04.15
27	What is problem of mutually suspicious subsystems	This problem is defined as follows. Suppose that a program is provided that can be invoked as a service by a number of different users	Remember	CO 5	CLO 19	AITB04.19
28	What is Language-Based Protection?	To the degree that protection is provided in existing computer systems, it has usually been achieved through the device of an operating-system kernel	Remember	CO 5	CLO 19	AITB04.19
29	Define file attributes	File attributes are settings associated with computer files that grant or deny certain rights to how a user or the operating system can access that file. For example, IBM	Remember	CO 5	CLO 19	AITB04.19
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Signature of the Faculty   **Signature of the HOD**