UNIT II PROCESS
MANAGEMENT

1. Which module gives control of the CPU to the process selected by the short-term scheduler?

a) dispatcher
b) interrupt
c) scheduler
d) none of the mentioned

Answer: a
Explanation: None.

2. The processes that are residing in main memory and are ready and waiting to execute are kept on a list called _____

a) job queue
b) ready queue
c) execution queue
d) process queue

Answer: b
Explanation: None.

3. The interval from the time of submission of a process to the time of completion is termed as _____

a) waiting time
b) turnaround time
c) response time
d) throughput

Answer: b
Explanation: None.

4. Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?
a) first-come, first-served scheduling
b) shortest job scheduling
c) priority scheduling
d) none of the mentioned
Answer: a
Explanation: None.
5. In priority scheduling algorithm _____
a) CPU is allocated to the process with highest priority
b) CPU is allocated to the process with lowest priority
c) Equal priority processes can not be scheduled
d) None of the mentioned
Answer: a
Explanation: None.
6. In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of _____
a) all process
b) currently running process
c) parent process
d) init process
Answer: b
Explanation: None.

7. Which algorithm is defined in Time quantum?
a) shortest job scheduling algorithm
b) round robin scheduling algorithm
c) priority scheduling algorithm
d) multilevel queue scheduling algorithm
Answer: b
Explanation: None.
8. Process are classified into different groups in _____
a) shortest job scheduling algorithm
b) round robin scheduling algorithm
c) priority scheduling algorithm
d) multilevel queue scheduling algorithm
Answer: d
Explanation: None.
9. In multilevel feedback scheduling algorithm _____
a) a process can move to a different classified ready queue
b) classification of ready queue is permanent
c) processes are not classified into groups
d) none of the mentioned
Answer: a
Explanation: None.
10. Which one of the following can not be scheduled by the kernel?
a) kernel level thread
b) user level thread
c) process

d) none of the mentioned
Answer: b
Explanation: User level threads are managed by thread library and the kernel is unaware of them.
1. CPU scheduling is the basis of _____
a) multiprocessor systems
b) multiprogramming operating systems
c) larger memory sized systems
d) none of the mentioned
Answer: b
Explanation: None.
2. With multiprogramming _____ is used productively.
a) time
b) space
c) money
d) all of the mentioned
Answer: a
Explanation: None.
3. What are the two steps of a process execution?
a) I/O & OS Burst
b) CPU & I/O Burst
c) Memory & I/O Burst
d) OS & Memory Burst
Answer: b
Explanation: None.
4. An I/O bound program will typically have

_____
a) a few very short CPU bursts
b) many very short I/O bursts
c) many very short CPU bursts
d) a few very short I/O bursts
Answer: c
Explanation: None.
5. A process is selected from the _____ queue by the _____ scheduler, to be executed.
a) blocked, short term
b) wait, long term
c) ready, short term
d) ready, long term
Answer: c
Explanation: None.
6. In the following cases non – preemptive scheduling occurs?
a) When a process switches from the running state to the ready state
b) When a process goes from the running state to the waiting state
c) When a process switches from the waiting state to the ready state
d) All of the mentioned
Answer: b
Explanation: There is no other choice.
7. The switching of the CPU from one process or thread to another is called
_____

a) process switch
b) task switch
c) context switch
d) all of the mentioned
Answer: d
Explanation: None
.
c) context switch
d) all of the mentioned
Answer: d
Explanation: None.
8. What is Dispatch latency?
a) the speed of dispatching a process from running to the ready state
b) the time of dispatching a process from running to ready state and keeping the CPU idle
c) the time to stop one process and start running another one
d) none of the mentioned
Answer: c
Explanation: None.
9. Scheduling is done so as to _____
a) increase CPU utilization
b) decrease CPU utilization
c) keep the CPU more idle
d) none of the mentioned
Answer: a
Explanation: None.
10. Scheduling is done so as to

_____
a) increase the throughput
b) decrease the throughput
c) increase the duration of a specific amount of work
d) none of the mentioned
Answer: a
Explanation: None.
11. What is Turnaround time?
a) the total waiting time for a process to finish execution
b) the total time spent in the ready queue
c) the total time spent in the running queue
d) the total time from the completion till the submission of a process
Answer: d
Explanation: None.
12. Scheduling is done so as to
_____
a) increase the turnaround time
b) decrease the turnaround time
c) keep the turnaround time same
d) there is no relation between scheduling and turnaround time
Answer: b
Explanation: None.
13. What is Waiting time?
a) the total time in the blocked and waiting queues
b) the total time spent in the ready queue

c) the total time spent in the running queue
d) the total time from the completion till the submission of a process
Answer: b
Explanation: None.
14. Scheduling is done so as to _____
a) increase the waiting time
b) keep the waiting time the same
c) decrease the waiting time
d) none of the mentioned
Answer: c
Explanation: None.
15. What is Response time?
a) the total time taken from the submission time till the completion time
b) the total time taken from the submission time till the first response is produced
c) the total time taken from submission time till the response is output
d) none of the mentioned
Answer: b
Explanation: None.
1. Round robin scheduling falls under the category of _____
a) Non-preemptive scheduling
b) Preemptive scheduling
c) All of the mentioned
d) None of the mentioned

Answer: b
Explanation: None.
2. With round robin scheduling algorithm in a time shared system _____
a) using very large time slices converts it into First come First served scheduling algorithm
b) using very small time slices converts it into First come First served scheduling algorithm
c) using extremely small time slices increases performance
d) using very small time slices converts it into Shortest Job First algorithm
Answer: a
Explanation: All the processes will be able to get completed.
3. The portion of the process scheduler in an operating system that dispatches processes is concerned with _____
a) assigning ready processes to CPU
b) assigning ready processes to waiting queue
c) assigning running processes to blocked queue
d) all of the mentioned
Answer: a
Explanation: None.
4. Complex scheduling algorithms _____
a) are very appropriate for very large computers
b) use minimal resources

c) use many resources
d) all of the mentioned
Answer: a
Explanation: Large computers are overloaded with a greater number of processes.
5. What is FIFO algorithm?
a) first executes the job that came in last in the queue
b) first executes the job that came in first in the queue
c) first executes the job that needs minimal processor
d) first executes the job that has maximum processor needs
Answer: b
Explanation: None.
6. The strategy of making processes that are logically runnable to be temporarily suspended is called _____
a) Non preemptive scheduling
b) Preemptive scheduling
c) Shortest job first
d) First come First served
Answer: b
Explanation: None.
7. What is Scheduling?
a) allowing a job to use the processor
b) making proper use of processor
c) all of the mentioned

d) none of the mentioned
Answer: a
Explanation: None.
8. There are 10 different processes running on a workstation. Idle processes are waiting for an input event in the input queue. Busy processes are scheduled with the Round-Robin time sharing method. Which out of the following quantum times is the best value for small response times, if the processes have a short runtime, e.g. less than 10ms?
a) tQ = 15ms
b) tQ = 40ms
c) tQ = 45ms
d) tQ = 50ms
Answer: a
Explanation: None.
9. Orders are processed in the sequence they arrive if _____ rule sequences the jobs.
a) earliest due date
b) slack time remaining
c) first come, first served
d) critical ratio
Answer: c
Explanation: None.
10. Which of the following algorithms tends to minimize the process flow time?
a) First come First served
b) Shortest Job First
c) Earliest Deadline First

d) Longest Job First
Answer: b
Explanation: None.
11. Under multiprogramming, turnaround time for short jobs is usually _____ and that for long jobs is slightly _____
a) Lengthened; Shortened
b) Shortened; Lengthened
c) Shortened; Shortened
d) Shortened; Unchanged
Answer: b
Explanation: None.
12. Which of the following statements are true? (GATE 2010)
I. Shortest remaining time first scheduli ng may cause starvation
II. Preemptive scheduling may cause starv ation
III. Round robin is better than FCFS in t erms of response time
a) I only
b) I and III only
c) II and III only
d) I, II and III
Answer: d
Explanation: I) Shortest remaining time first scheduling is a preemptive version of shortest job scheduling. It may cause starvation as shorter processes may keep coming and a long CPU burst process never gets CPU.

II) Preemption may cause starvation. If priority based scheduling with preemption is used, then a low priority process may never get CPU.
III) Round Robin Scheduling improves response time as all processes get CPU after a specified time.

1. Which is the most optimal scheduling algorithm?
a) FCFS – First come First served
b) SJF – Shortest Job First
c) RR – Round Robin
d) None of the mentioned
Answer: b
Explanation: None.

2. The real difficulty with SJF in short term scheduling is _____
a) it is too good an algorithm
b) knowing the length of the next CPU request
c) it is too complex to understand
d) none of the mentioned
Answer: b
Explanation: None.

3. The FCFS algorithm is particularly troublesome for _____
a) time sharing systems
b) multiprogramming systems
c) multiprocessor systems
d) operating systems

Answer: b
Explanation: In a time sharing system, each user needs to get a share of the CPU at regular intervals.
4. Consider the following set of processes, the length of the CPU burst time given in milliseconds.

Process	Burst time
P1	6
P2	8
P3	7
P4	3

Assuming the above process being scheduled with the SJF scheduling algorithm.
a) The waiting time for process P1 is 3ms
b) The waiting time for process P1 is 0ms
c) The waiting time for process P1 is 16ms
d) The waiting time for process P1 is 9ms
Answer: a
Explanation: None.
5. Preemptive Shortest Job First scheduling is sometimes called _____
a) Fast SJF scheduling
b) EDF scheduling – Earliest Deadline First
c) HRRN scheduling – Highest Response Ratio Next
d) SRTN scheduling – Shortest Remaining Time Next
Answer: d
Explanation: None.

6. An SJF algorithm is simply a priority algorithm where the priority is _____
a) the predicted next CPU burst
b) the inverse of the predicted next CPU burst
c) the current CPU burst
d) anything the user wants
Answer: a
Explanation: The larger the CPU burst, the lower the priority.
7. Choose one of the disadvantages of the priority scheduling algorithm?
a) it schedules in a very complex manner
b) its scheduling takes up a lot of time
c) it can lead to some low priority process waiting indefinitely for the CPU
d) none of the mentioned
Answer: c
Explanation: None.
8. What is ‘Aging’?
a) keeping track of cache contents
b) keeping track of what pages are currently residing in memory
c) keeping track of how many times a given page is referenced
d) increasing the priority of jobs to ensure termination in a finite time
Answer: d
Explanation: None.
9. A solution to the problem of indefinite blockage of low – priority processes is

_____
a) Starvation
b) Wait queue
c) Ready queue
d) Aging
Answer: d
Explanation: None.
10. Which of the following statements are true? (GATE 2010)
i) Shortest remaining time first scheduli ng may cause starvation
ii) Preemptive scheduling may cause starv ation
iii) Round robin is better than FCFS in t erms of response time
a) i only
b) i and iii only
c) ii and iii only
d) i, ii and iii
Answer: d
Explanation: None.
11. Which of the following scheduling algorithms gives minimum average waiting time?
a) FCFS
b) SJF
c) Round – robin
d) Priority
Answer: b
Explanation: None.

1. What is an operating system?
a) collection of programs that manages hardware resources
b) system service provider to the application programs
c) interface between the hardware and application programs
d) all of the mentioned
Answer: d
Explanation: An Operating System acts as an intermediary between user/user applications/application programs and hardware. It is a program that manages hardware resources. It provides services to application programs.
2. To access the services of operating system, the interface is provided by the _____
a) System calls
b) API
c) Library
d) Assembly instructions
Answer: a
Explanation: To access services of the Operating System an interface is provided by the System Calls. Generally, these are functions written in C and C++. Open, Close, Read, Write are some of most prominently used system calls.
3. Which one of the following is not true?
a) kernel is the program that constitutes the

central core of the operating system
b) kernel is the first part of operating system to load into memory during booting
c) kernel is made of various modules which can not be loaded in running operating system
d) kernel remains in the memory during the entire computer session
Answer: c
Explanation: Kernel is the first program which is loaded in memory when OS is loading as well as it remains in memory till OS is running. Kernel is the core part of the OS which is responsible for managing resources, allowing multiple processes to use the resources and provide services to various processes. Kernel modules can be loaded and unloaded in run-time i.e. in running OS.
4. Which one of the following error will be handle by the operating system?
a) power failure
b) lack of paper in printer
c) connection failure in the network
d) all of the mentioned
Answer: d
Explanation: All the mentioned errors are handled by OS. The OS is continuously monitoring all of its resources. Also, the OS is constantly detecting and correcting errors.
5. What is the main function of the command interpreter?

a) to get and execute the next user-specified command
b) to provide the interface between the API and application program
c) to handle the files in operating system
d) none of the mentioned
Answer: a
Explanation: The main function of command interpreter is to get and execute the next user-specified command. Command Interpreter checks for valid command and then runs that command else it will throw an error.
6. In Operating Systems, which of the following is/are CPU scheduling algorithms?
a) Round Robin
b) Shortest Job First
c) Priority
d) All of the mentioned
Answer: d
Explanation: In Operating Systems, CPU scheduling algorithms are:
i) First Come First Served scheduling
ii) Shortest Job First scheduling
iii) Priority scheduling
iv) Round Robin scheduling
v) Multilevel Queue scheduling
vi) Multilevel Feedback Queue scheduling
All of these scheduling algorithms have their own advantages and disadvantages.
7. If a process fails, most operating system

write the error information to a _____
a) log file
b) another running process
c) new file
d) none of the mentioned
Answer: a
Explanation: If a process fails, most operating systems write the error information to a log file. Log file is examined by the debugger, to find out what is the actual cause of that particular problem. Log file is useful for system programmers for correcting errors.
8. Which facility dynamically adds probes to a running system, both in user processes and in the kernel?
a) DTrace
b) DLocate
c) DMap
d) DAdd
Answer: a
Explanation: A facility that dynamically adds probes to a running system, both in user process and in the kernel is called DTrace. This is very much useful in troubleshooting kernels in real-time.
9. Which one of the following is not a real time operating system?
a) VxWorks
b) QNX
c) RTLinux

d) Palm OS
Answer: d
Explanation: VxWorks, QNX & RTLinux are real-time operating systems. Palm OS is a mobile operating system. Palm OS is developed for Personal Digital Assistants (PDAs).
10. The OS X has _____
a) monolithic kernel
b) hybrid kernel
c) microkernel
d) monolithic kernel with modules
Answer: b
Explanation: OS X has a hybrid kernel. Hybrid kernel is a combination of two different kernels. OS X is developed by Apple and originally it is known as Mac OS X.
1. The systems which allow only one process execution at a time, are called _____
a) uniprogramming systems
b) uniprocessing systems
c) unitasking systems
d) none of the mentioned
Answer: b
Explanation: Those systems which allows more than one process execution at a time, are called multiprogramming systems. Uniprocessing means only one processor.
2. In operating system, each process has its

own _____
a) address space and global variables
b) open files
c) pending alarms, signals and signal handlers
d) all of the mentioned
Answer: d
Explanation: In Operating Systems, each process has its own address space which contains code, data, stack and heap segments or sections. Each process also has a list of files which is opened by the process as well as all pending alarms, signals and various signal handlers.
3. In Unix, Which system call creates the new process?
a) fork
b) create
c) new
d) none of the mentioned
Answer: a
Explanation: In UNIX, a new process is created by fork() system call. fork() system call returns a process ID which is generally the process id of the child process created.
4. A process can be terminated due to _____
a) normal exit
b) fatal error
c) killed by another process
d) all of the mentioned

Answer: d
Explanation: A process can be terminated normally by completing its task or because of fatal error or killed by another process or forcefully killed by a user. When the process completes its task without any error then it exits normally. The process may exit abnormally because of the occurrence of fatal error while it is running. The process can be killed or terminated forcefully by another process.
5. What is the ready state of a process?
a) when process is scheduled to run after some execution
b) when process is unable to run until some task has been completed
c) when process is using the CPU
d) none of the mentioned
Answer: a
Explanation: Ready state of the process means process has all necessary resources which are required for execution of that process when CPU is allocated. Process is ready for execution but waiting for the CPU to be allocated.
6. What is interprocess communication?
a) communication within the process
b) communication between two process
c) communication between two threads of same process

d) none of the mentioned
Answer: b
Explanation: Interprocess Communication (IPC) is a communication mechanism that allows processes to communicate with each other and synchronise their actions without using the same address space. IPC can be achieved using shared memory and message passing.
7. A set of processes is deadlock if _____
a) each process is blocked and will remain so forever
b) each process is terminated
c) all processes are trying to kill each other
d) none of the mentioned
Answer: a
Explanation: Deadlock is a situation which occurs because process A is waiting for one resource and holds another resource (blocking resource). At the same time another process B demands blocking a resource as it is already held by a process A, process B is waiting state unless and until process A releases occupied resource.
8. A process stack does not contain _____
a) Function parameters
b) Local variables
c) Return addresses

d) PID of child process
Answer: d
Explanation: Process stack contains Function parameters, Local variables and Return address. It does not contain the PID of child process.
9. Which system call can be used by a parent process to determine the termination of child process?
a) wait
b) exit
c) fork
d) get
Answer: a
Explanation: wait() system call is used by the parent process to determine termination of child process. The parent process uses wait() system call and gets the exit status of the child process as well as the pid of the child process which is terminated.
10. The address of the next instruction to be executed by the current process is provided by the _____
a) CPU registers
b) Program counter
c) Process stack
d) Pipe
Answer: b
Explanation: The address of the next instruction to be executed by the current

process is provided by the Program Counter. After every instruction is executed, the Program Counter is incremented by 1 i.e. address of the next instruction to be executed. CPU fetches instruction from the address denoted by Program Counter and execute it.

1. A Process Control Block(PCB) does not contain which of the following?

a) Code

b) Stack

c) Bootstrap program

d) Data

Answer: c

Explanation: Process Control Block (PCB) contains information related to a process such as Process State, Program Counter, CPU Register, etc. Process Control Block is also known as Task Control Block. Bootstrap program is a program which runs initially when the system or computer is booted or rebooted.

2. The number of processes completed per unit time is known as _____

a) Output

b) Throughput

c) Efficiency

d) Capacity

Answer: b

Explanation: The number of processes completed per unit time is known as

Throughput. Suppose there are 4 processes A, B, C & D they are taking 1, 3, 4 & 7 units of time respectively for their executions. For 10 units of time, throughput is high if process A, B & C are running first as 3 processes can execute. If process C runs first then throughput is low as maximum only 2 processes can execute. Throughput is low for processes which take a long time for execution. Throughput is high for processes which take a short time for execution.

3. The state of a process is defined by _____

a) the final activity of the process
b) the activity just executed by the process
c) the activity to next be executed by the process
d) the current activity of the process

Answer: d

Explanation: The state of a process is defined by the current activity of the process. A process state changes when the process executes. The process states are as New, Ready, Running, Wait, Terminated.

4. Which of the following is not the state of a process?

a) New
b) Old
c) Waiting
d) Running

Answer: b
Explanation: There is no process state such as old. When a process is created then the process is in New state. When the process gets the CPU for its execution then the process is in Running state. When the process is waiting for an external event then the process is in a Waiting state.
5. What is a Process Control Block?
a) Process type variable
b) Data Structure
c) A secondary storage section
d) A Block in memory
Answer: b
Explanation: A Process Control Block (PCB) is a data structure. It contains information related to a process such as Process State, Program Counter, CPU Register, etc. Process Control Block is also known as Task Control Block.
6. The entry of all the PCBs of the current processes is in _____
a) Process Register
b) Program Counter
c) Process Table
d) Process Unit
Answer: c
Explanation: The entry of all the PCBs of the current processes is in Process Table. The Process Table has the status of each and every

process that is created in OS along with their PIDs.
7. What is the degree of multiprogramming?
a) the number of processes executed per unit time
b) the number of processes in the ready queue
c) the number of processes in the I/O queue
d) the number of processes in memory
Answer: d
Explanation: Multiprogramming means the number of processes are in the ready states. To increase utilization of CPU, Multiprogramming is one of the most important abilities of OS. Generally, a single process cannot use CPU or I/O at all time, whenever CPU or I/O is available another process can use it. By doing this CPU utilization is increased.
8. A single thread of control allows the process to perform _____
a) only one task at a time
b) multiple tasks at a time
c) only two tasks at a time
d) all of the mentioned
Answer: a
Explanation: A single thread of control allows the process to perform only one task at a time. In the case of multi-core, multiple threads can be run simultaneously and can perform multiple tasks at a time.

9. What is the objective of multiprogramming?
a) Have a process running at all time
b) Have multiple programs waiting in a queue ready to run
c) To increase CPU utilization
d) None of the mentioned
Answer: c
Explanation: The objective of multiprogramming is to increase CPU utilization. Generally, a single process cannot use CPU or I/O at all time, whenever CPU or I/O is available another process can use it. Multiprogramming offers this ability to OS by keeping multiple programs in a ready queue.

1. Which of the following do not belong to queues for processes?
a) Job Queue
b) PCB queue
c) Device Queue
d) Ready Queue
Answer: b
Explanation: PCB queue does not belong to queues for processes. PCB is a process control block which contains information related to process. Each process is represented by PCB.
2. When the process issues an I/O request

_____
a) It is placed in an I/O queue
b) It is placed in a waiting queue
c) It is placed in the ready queue
d) It is placed in the Job queue
Answer: a
Explanation: When the process issues an I/O request it is placed in an I/O queue. I/O is a resource and it should be used effectively and every process should get access to it. There might be multiple processes which requested for I/O. Depending on scheduling algorithm I/O is allocated to any particular process and after completing I/O operation, I/O access is returned to the OS.
3. What will happen when a process terminates?
a) It is removed from all queues
b) It is removed from all, but the job queue
c) Its process control block is de-allocated
d) Its process control block is never de-allocated
Answer: a
Explanation: When a process terminates, it removes from all queues. All allocated resources to that particular process are deallocated and all those resources are returned back to OS.
4. What is a long-term scheduler?
a) It selects processes which have to be

brought into the ready queue
b) It selects processes which have to be executed next and allocates CPU
c) It selects processes which heave to remove from memory by swapping
d) None of the mentioned
Answer: a
Explanation: A long-term scheduler selects processes which have to be brought into the ready queue. When processes enter the system, they are put in the job queue. Long-term scheduler selects processes from the job queue and puts them in the ready queue. It is also known as Job Scheduler.
5. If all processes I/O bound, the ready queue will almost always be _____ and the Short term Scheduler will have a _____ to do.
a) full, little
b) full, lot
c) empty, little
d) empty, lot
Answer: c
Explanation: If all processes are I/O bound, the ready queue will almost empty and the short-term scheduler will have a little to do. I/O bound processes spend more time doing I/O than computation.
6. What is a medium-term scheduler?
a) It selects which process has to be brought into the ready queue

b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping
d) None of the mentioned
Answer: c
Explanation: A medium-term scheduler selects which process to remove from memory by swapping. The medium-term scheduler swapped out the process and later swapped in. Swapping helps to free up memory.
7. What is a short-term scheduler?
a) It selects which process has to be brought into the ready queue
b) It selects which process has to be executed next and allocates CPU
c) It selects which process to remove from memory by swapping
d) None of the mentioned
Answer: b
Explanation: A short-term scheduler selects a process which has to be executed next and allocates CPU. Short-term scheduler selects a process from the ready queue. It selects processes frequently.
8. The primary distinction between the short term scheduler and the long term scheduler is _____
a) The length of their queues

b) The type of processes they schedule
c) The frequency of their execution
d) None of the mentioned
Answer: c
Explanation: The primary distinction between the short-term scheduler and long-term scheduler is the frequency of their execution. Short-term scheduler executes frequently while long-term scheduler executes much less frequently.
9. The only state transition that is initiated by the user process itself is _____
a) block
b) wakeup
c) dispatch
d) none of the mentioned
Answer: a
Explanation: The only state transition that is initiated by the user process itself is block. Whenever a user process initiates an I/O request it goes into block state unless and until the I/O request is not completed.
10. In a time-sharing operating system, when the time slot given to a process is completed, the process goes from the running state to the _____
a) Blocked state
b) Ready state
c) Suspended state
d) Terminated state

Answer: b
Explanation: In a time-sharing operating system, when the time slot given to a process is completed, the process goes from the running state to the Ready State. In a time-sharing operating system unit time is defined for sharing CPU, it is called a time quantum or time slice. If a process takes less than 1 time quantum, then the process itself releases the CPU.
11. In a multiprogramming environment _____
a) the processor executes more than one process at a time
b) the programs are developed by more than one person
c) more than one process resides in the memory
d) a single user can execute many programs at the same time
Answer: c
Explanation: In a multiprogramming environment more than one process resides in the memory. Whenever a CPU is available, one process amongst all present in memory gets the CPU for execution.
Multiprogramming increases CPU utilization.
12. Suppose that a process is in “Blocked” state waiting for some I/O service. When the service is completed, it goes to the

_____
a) Running state
b) Ready state
c) Suspended state
d) Terminated state

Answer: b
Explanation: Suppose that a process is in “Blocked” state waiting for some I/O service. When the service is completed, it goes to the ready state. Process never goes directly to the running state from the waiting state. Only processes which are in ready state go to the running state whenever CPU allocated by operating system.
13. The context of a process in the PCB of a process does not contain _____
a) the value of the CPU registers
b) the process state
c) memory-management information
d) context switch time
Answer: d
Explanation: The context of a process in the PCB of a process does not contain context switch time. When switching CPU from one process to another, the current context of the process needs to be saved. It includes values of the CPU registers, process states, memory-management information.
14. Which of the following need not

necessarily be saved on a context switch between processes?
a) General purpose registers
b) Translation lookaside buffer
c) Program counter
d) All of the mentioned
Answer: b
Explanation: Translation Look-aside Buffer (TLB) need not necessarily be saved on a context switch between processes. A special, small, fast-lookup hardware cache is called Translation Look-aside Buffer. TLB used to reduce memory access time.
15. Which of the following does not interrupt a running process?
a) A device
b) Timer
c) Scheduler process
d) Power failure
Answer: c
Explanation: Scheduler process does not interrupt a running process. Scheduler process selects an available process from a pool of available processes and allocates CPU to it.
1. Which process can be affected by other processes executing in the system?
a) cooperating process
b) child process
c) parent process
d) init process

Answer: a
Explanation: None.
2. When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called?
a) dynamic condition
b) race condition
c) essential condition
d) critical condition
Answer: b
Explanation: None.
3. If a process is executing in its critical section, then no other processes can be executing in their critical section. This condition is called?
a) mutual exclusion
b) critical exclusion
c) synchronous exclusion
d) asynchronous exclusion
Answer: a
Explanation: None.
4. Which one of the following is a synchronization tool?
a) thread
b) pipe
c) semaphore
d) socket

Answer: c

Explanation: None.
5. A semaphore is a shared integer variable _____
a) that can not drop below zero
b) that can not be more than zero
c) that can not drop below one
d) that can not be more than one
Answer: a
Explanation: None.
6. Mutual exclusion can be provided by the _____
a) mutex locks
b) binary semaphores
c) both mutex locks and binary semaphores
d) none of the mentioned
Answer: c
Explanation: Binary Semaphores are known as mutex locks.
7. When high priority task is indirectly preempted by medium priority task effectively inverting the relative priority of the two tasks, the scenario is called _____
a) priority inversion
b) priority removal
c) priority exchange
d) priority modification
Answer: a
Explanation: None.
8. Process synchronization can be done on

_____
a) hardware level
b) software level
c) both hardware and software level
d) none of the mentioned
Answer: c
Explanation: None.
9. A monitor is a module that encapsulates
_____
a) shared data structures
b) procedures that operate on shared data structure
c) synchronization between concurrent procedure invocation
d) all of the mentioned
Answer: d
Explanation: None.
10. To enable a process to wait within the monitor _____
a) a condition variable must be declared as condition
b) condition variables must be used as boolean objects
c) semaphore must be used
d) all of the mentioned
Answer: a
Explanation: None.
1. Restricting the child process to a subset of the parent’s resources prevents any process from _____

a) overloading the system by using a lot of secondary storage
b) under-loading the system by very less CPU utilization
c) overloading the system by creating a lot of sub-processes
d) crashing the system by utilizing multiple resources
Answer: c
Explanation: None.
2. A parent process calling _____ system call will be suspended until children processes terminate.
a) wait
b) fork
c) exit
d) exec
Answer: a
Explanation: None.
3. Cascading termination refers to termination of all child processes before the parent terminates _____
a) Normally
b) Abnormally
c) Normally or abnormally
d) None of the mentioned
Answer: a
Explanation: None.
4. With _____ only one process can execute at a time; meanwhile all other process

are waiting for the processor. With _____ more than one process can be running simultaneously each on a different processor.
a) Multiprocessing, Multiprogramming
b) Multiprogramming, Uniprocessing
c) Multiprogramming, Multiprocessing
d) Uniprogramming, Multiprocessing
Answer: d
Explanation: None.
5. In UNIX, each process is identified by its _____
a) Process Control Block
b) Device Queue
c) Process Identifier
d) None of the mentioned
Answer: c
Explanation: None.
6. In UNIX, the return value for the fork system call is _____ for the child process and _____ for the parent process.
a) A Negative integer, Zero
b) Zero, A Negative integer
c) Zero, A nonzero integer
d) A nonzero integer, Zero
Answer: c
Explanation: None.
7. The child process can _____
a) be a duplicate of the parent process
b) never be a duplicate of the parent process

c) cannot have another program loaded into it
d) never have another program loaded into it
Answer: a
Explanation: None.
8. The child process completes execution, but the parent keeps executing, then the child process is known as _____
a) Orphan
b) Zombie
c) Body
d) Dead
Answer: b
Explanation: None.
1. What is Inter process communication?
a) allows processes to communicate and synchronize their actions when using the same address space
b) allows processes to communicate and synchronize their actions without using the same address space
c) allows the processes to only synchronize their actions without communication
d) none of the mentioned
Answer: b
Explanation: None.
2. Message passing system allows processes to _____
a) communicate with one another without resorting to shared data
b) communicate with one another by resorting

to shared data
c) share data
d) name the recipient or sender of the message
Answer: a
Explanation: None.

3. Which of the following two operations are provided by the IPC facility?
a) write & delete message
b) delete & receive message
c) send & delete message
d) receive & send message
Answer: d
Explanation: None.
4. Messages sent by a process _____
a) have to be of a fixed size
b) have to be a variable size
c) can be fixed or variable sized
d) None of the mentioned
Answer: c
Explanation: None.
5. The link between two processes P and Q to send and receive messages is called _____
a) communication link
b) message-passing link
c) synchronization link
d) all of the mentioned
Answer: a

Explanation: None.
6. Which of the following are TRUE for direct communication?
a) A communication link can be associated with N number of process(N = max. number of processes supported by system)
b) A communication link can be associated with exactly two processes
c) Exactly N/2 links exist between each pair of processes(N = max. number of processes supported by system)
d) Exactly two link exists between each pair of processes
Answer: b
Explanation: None.
7. In indirect communication between processes P and Q _____
a) there is another process R to handle and pass on the messages between P and Q
b) there is another machine between the two processes to help communication
c) there is a mailbox to help communication between P and Q
d) none of the mentioned
Answer: c
Explanation: None.
8. In the non blocking send _____
a) the sending process keeps sending until the message is received
b) the sending process sends the message and

resumes operation
c) the sending process keeps sending until it receives a message
d) none of the mentioned
Answer: b
Explanation: None.
9. In the Zero capacity queue _____
a) the queue can store at least one message
b) the sender blocks until the receiver receives the message
c) the sender keeps sending and the messages don’t wait in the queue
d) none of the mentioned
Answer: b
Explanation: None.
10. The Zero Capacity queue _____
a) is referred to as a message system with buffering
b) is referred to as a message system with no buffering
c) is referred to as a link
d) none of the mentioned
Answer: b
Explanation: None.
11. Bounded capacity and Unbounded capacity queues are referred to as _____

a) Programmed buffering
b) Automatic buffering

c) User defined buffering
d) No buffering
Answer: b
Explanation: None.
1. Concurrent access to shared data may result in _____
a) data consistency
b) data insecurity
c) data inconsistency
d) none of the mentioned
Answer: c
Explanation: None.
2. A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called _____
a) data consistency
b) race condition
c) aging
d) starvation
Answer: b
Explanation: None.
3. The segment of code in which the process may change common variables, update tables, write into files is known as _____
a) program
b) critical section
c) non – critical section
d) synchronizing

Answer: b
Explanation: None.
4. Which of the following conditions must be satisfied to solve the critical section problem?
a) Mutual Exclusion
b) Progress
c) Bounded Waiting
d) All of the mentioned
Answer: d
Explanation: None.
5. Mutual exclusion implies that _____
a) if a process is executing in its critical section, then no other process must be executing in their critical sections
b) if a process is executing in its critical section, then other processes must be executing in their critical sections
c) if a process is executing in its critical section, then all the resources of the system must be blocked until it finishes execution
d) none of the mentioned
Answer: a
Explanation: None.
6. Bounded waiting implies that there exists a bound on the number of times a process is allowed to enter its critical section _____
a) after a process has made a request to enter its critical section and before the request is

granted
b) when another process is in its critical section
c) before a process has made a request to enter its critical section
d) none of the mentioned
Answer: a
Explanation: None.
7. A minimum of _____ variable(s) is/are required to be shared between processes to solve the critical section problem.
a) one
b) two
c) three
d) four
Answer: b
Explanation: None
8. In the bakery algorithm to solve the critical section problem _____
a) each process is put into a queue and picked up in an ordered manner
b) each process receives a number (may or may not be unique) and the one with the lowest number is served next
c) each process gets a unique number and the one with the highest number is served next
d) each process gets a unique number and the one with the lowest number is served next
Answer: b
Explanation: None.

1. An un-interruptible unit is known as _____
a) single
b) atomic
c) static
d) none of the mentioned
Answer: b
Explanation: None.
2. TestAndSet instruction is executed _____
a) after a particular process
b) periodically
c) atomically
d) none of the mentioned
Answer: c
Explanation: None.
3. Semaphore is a/an _____ to solve the critical section problem.
a) hardware for a system
b) special program for a system
c) integer variable
d) none of the mentioned
Answer: c
Explanation: None.
4. What are the two atomic operations permissible on semaphores?
a) wait
b) stop
c) hold
d) none of the mentioned

Answer: a
Explanation: None.
5. What are Spinlocks?
a) CPU cycles wasting locks over critical sections of programs
b) Locks that avoid time wastage in context switches
c) Locks that work better on multiprocessor systems
d) All of the mentioned
Answer: d
Explanation: None.
6. What is the main disadvantage of spinlocks?
a) they are not sufficient for many process
b) they require busy waiting
c) they are unreliable sometimes
d) they are too complex for programmers
Answer: b
Explanation: None.
7. The wait operation of the semaphore basically works on the basic _____ system call.
a) stop()
b) block()
c) hold()
d) wait()
Answer: b
Explanation: None.
8. The signal operation of the semaphore

basically works on the basic _____ system call.
a) continue()
b) wakeup()
c) getup()
d) start()

Answer: b
Explanation: None.
9. If the semaphore value is negative _____
a) its magnitude is the number of processes waiting on that semaphore
b) it is invalid
c) no operation can be further performed on it until the signal operation is performed on it
d) none of the mentioned
Answer: a
Explanation: None.
10. The code that changes the value of the semaphore is _____
a) remainder section code
b) non – critical section code
c) critical section code
d) none of the mentioned
Answer: c
Explanation: None.
11. The following program consists of 3 concurrent processes and 3 binary semaphores. The semaphores are initialized

as S0 = 1, S1 = 0, S2 = 0.
Process P0
while(true)
{
 wait(S0);
 print '0';
 release(S1);
 release(S2);
}
Process P1
wait(S1);
release(S0);
Process P2
wait(S2);
release(S0);
How many times will P0 print ‘0’?
a) At least twice
b) Exactly twice
c) Exactly thrice
d) Exactly once
Answer: a
Explanation: None.
12. Each process Pi, i = 0,1,2,3,……,9 is
coded as follows.
repeat
 P(mutex)
 {Critical Section}
 V(mutex)
 forever
The code for P10 is identical except that it

uses V(mutex) instead of P(mutex). What is the largest number of processes that can be inside the critical section at any moment (the mutex being initialized to 1)?
a) 1
b) 2
c) 3
d) None of the mentioned
Answer: c
Explanation: Any one of the 9 processes can get into critical section after executing P(mutex) which decrements the mutex value to 0. At this time P10 can enter critical section by incrementing the value to 1. Now any of the 9 processes can enter the critical section by again decrementing the mutex value to 0. None of the remaining processes can get into their critical sections.

13. Two processes, P1 and P2, need to access a critical section of code. Consider the following synchronization construct used by the processes.

```
Process P1 :
while(true)
{
w1 = true;
while(w2 == true);
Critical section
w1 = false;
```

}
Remainder Section
Process P2 :
while(true)
{
w2 = true;
while(w1 == true);
Critical section
w2 = false;
}
Remainder Section
Here, w1 and w2 have shared variables, which are initialized to false. Which one of the following statements is TRUE about the above construct?
a) It does not ensure mutual exclusion
b) It does not ensure bounded waiting
c) It requires that processes enter the critical section in strict alternation
d) It does not prevent deadlocks but ensures mutual exclusion
Answer: d
Explanation: None.
1. What will happen if a non-recursive mutex is locked more than once?
a) Starvation
b) Deadlock
c) Aging
d) Signaling
Answer: b

Explanation: If a thread which had already locked a mutex, tries to lock the mutex again, it will enter into the waiting list of that mutex, which results in a deadlock. It is because no other thread can unlock the mutex.

2. What is a semaphore?

a) is a binary mutex

b) must be accessed from only one process

c) can be accessed from multiple processes

d) none of the mentioned

Answer: c

Explanation: None.

3. What are the two kinds of semaphores?

a) mutex & counting

b) binary & counting

c) counting & decimal

d) decimal & binary

Answer: b

Explanation: None.

4. What is a mutex?

a) is a binary mutex

b) must be accessed from only one process

c) can be accessed from multiple processes

d) none of the mentioned

Answer: b

Explanation: None.

5. At a particular time of computation the value of a counting semaphore is 7.Then 20 P operations and 15 V operations were

completed on this semaphore. The resulting value of the semaphore is? (GATE 1987)
a) 42
b) 2
c) 7
d) 12
Answer: b
Explanation: P represents Wait and V represents Signal. P operation will decrease the value by 1 every time and V operation will increase the value by 1 every time.
6. A binary semaphore is a semaphore with integer values _____
a) 1
b) -1
c) 0.8
d) 0.5
Answer: a
Explanation: None.
7. The following pair of processes share a common variable X.
Process A
int Y;
A1: Y = X*2;
A2: X = Y;
Process B
int Z;
B1: Z = X+1;
B2: X = Z;
X is set to 5 before either process begins

execution. As usual, statements within a process are executed sequentially, but statements in process A may execute in any order with respect to statements in process B. How many different values of X are possible after both processes finish executing?
a) two
b) three
c) four
d) eight
Answer: c
Explanation: Here are the possible ways in which statements from A and B can be interleaved.
A1 A2 B1 B2: X = 11
A1 B1 A2 B2: X = 6
A1 B1 B2 A2: X = 10
B1 A1 B2 A2: X = 10
B1 A1 A2 B2: X = 6
B1 B2 A1 A2: X = 12.
8. The program follows to use a shared binary semaphore T.
Process A
int Y;
A1: Y = X*2;
A2: X = Y;
signal(T);
Process B
int Z;
B1: wait(T);

B2: Z = X+1;
X = Z;
T is set to 0 before either process begins execution and, as before, X is set to 5.
Now, how many different values of X are possible after both processes finish executing?
a) one
b) two
c) three
d) four
Answer: a
Explanation: The semaphore T ensures that

all the statements from A finish execution before B begins. So now there is only one way in which statements from A and B can be interleaved:
A1 A2 B1 B2: X = 11.
9. Semaphores are mostly used to implement _____
a) System calls
b) IPC mechanisms
c) System protection
d) None of the mentioned
Answer: b
Explanation: None.
10. Spinlocks are intended to provide _____ only.
a) Mutual Exclusion

b) Bounded Waiting
c) Aging
d) Progress
Answer: b
Explanation: None.
1. The bounded buffer problem is also known as _____
a) Readers – Writers problem
b) Dining – Philosophers problem
c) Producer – Consumer problem
d) None of the mentioned
Answer: c
Explanation: None.
2. In the bounded buffer problem, there are the empty and full semaphores that _____
a) count the number of empty and full buffers
b) count the number of empty and full memory spaces
c) count the number of empty and full queues
d) none of the mentioned
Answer: a
Explanation: None.
3. In the bounded buffer problem _____
a) there is only one buffer
b) there are n buffers (n being greater than one but finite)
c) there are infinite buffers
d) the buffer size is bounded

Answer: b
Explanation: None.
4. To ensure difficulties do not arise in the readers – writers problem _____ are given exclusive access to the shared object.
a) readers
b) writers
c) readers and writers
d) none of the mentioned
Answer: b
Explanation: None.
5. The dining – philosophers problem will occur in case of _____
a) 5 philosophers and 5 chopsticks
b) 4 philosophers and 5 chopsticks
c) 3 philosophers and 5 chopsticks
d) 6 philosophers and 5 chopsticks
Answer: a
Explanation: None.
6. A deadlock free solution to the dining philosophers problem _____
a) necessarily eliminates the possibility of starvation
b) does not necessarily eliminate the possibility of starvation
c) eliminates any possibility of any kind of problem further
d) none of the mentioned
Answer: b
Explanation: None.

7. All processes share a semaphore variable mutex, initialized to 1. Each process must execute wait(mutex) before entering the

critical section and signal(mutex) afterward. Suppose a process executes in the following manner.
signal(mutex);
.....
critical section
.....
wait(mutex);
In this situation :
a) a deadlock will occur
b) processes will starve to enter critical section
c) several processes maybe executing in their critical section
d) all of the mentioned
Answer: c
Explanation: None.
8. All processes share a semaphore variable mutex, initialized to 1. Each process must execute wait(mutex) before entering the critical section and signal(mutex) afterward. Suppose a process executes in the following manner.
wait(mutex);
.....
critical section

.....
wait(mutex);
a) a deadlock will occur
b) processes will starve to enter critical section
c) several processes maybe executing in their critical section
d) all of the mentioned
Answer: a
Explanation: None.
9. Consider the methods used by processes P1 and P2 for accessing their critical sections whenever needed, as given below. The initial values of shared boolean variables S1 and S2 are randomly assigned. (GATE 2010)
Method used by P1 :
while(S1==S2);
Critical section
S1 = S2;
Method used by P2 :
while(S1!=S2);
Critical section
S2 = not(S1);
Which of the following statements describes properties achieved?
a) Mutual exclusion but not progress
b) Progress but not mutual exclusion
c) Neither mutual exclusion nor progress
d) Both mutual exclusion and progress
Answer: d

Explanation: None.
1. A monitor is a type of _____
a) semaphore
b) low level synchronization construct
c) high level synchronization construct
d) none of the mentioned
Answer: c
Explanation: None.
2. A monitor is characterized by _____
a) a set of programmer defined operators
b) an identifier
c) the number of variables in it
d) all of the mentioned

Answer: a
Explanation: None.
3. A procedure defined within a _____ can access only those variables declared locally within the _____ and its formal parameters.
a) process, semaphore
b) process, monitor
c) semaphore, semaphore
d) monitor, monitor
Answer: d
Explanation: None.
4. The monitor construct ensures that _____
a) only one process can be active at a time

within the monitor
b) n number of processes can be active at a time within the monitor (n being greater than 1)
c) the queue has only one process in it at a time
d) all of the mentioned
Answer: a
Explanation: None.
5. What are the operations that can be invoked on a condition variable?
a) wait & signal
b) hold & wait
c) signal & hold
d) continue & signal
Answer: a
Explanation: None.
6. Which is the process of invoking the wait operation?
a) suspended until another process invokes the signal operation
b) waiting for another process to complete before it can itself call the signal operation
c) stopped until the next process in the queue finishes execution
d) none of the mentioned
Answer: a
Explanation: None.
7. If no process is suspended, the signal operation _____

a) puts the system into a deadlock state
b) suspends some default process execution
c) nothing happens
d) the output is unpredictable
Answer: c
Explanation: None.
1. A collection of instructions that performs a single logical function is called _____
a) transaction
b) operation
c) function
d) all of the mentioned
Answer: a
Explanation: None.
2. A terminated transaction that has completed its execution successfully is _____ otherwise it is _____
a) committed, destroyed
b) aborted, destroyed
c) committed, aborted
d) none of the mentioned
Answer: c
Explanation: None.
3. The state of the data accessed by an aborted transaction must be restored to what it was just before the transaction started executing. This restoration is known as _____ of transaction.
a) safety

b) protection
c) roll – back
d) revert – back
Answer: c
Explanation: None.

4. Write ahead logging is a way _____
a) to ensure atomicity
b) to keep data consistent
c) that records data on stable storage
d) all of the mentioned
Answer: d
Explanation: None.
5. In the write ahead logging a _____ is maintained.
a) a memory
b) a system
c) a disk
d) a log record
Answer: d
Explanation: None.
6. An actual update is not allowed to a data item _____
a) before the corresponding log record is written out to stable storage
b) after the corresponding log record is written out to stable storage
c) until the whole log record has been checked for inconsistencies

d) all of the mentioned
Answer: a
Explanation: None.
7. The undo and redo operations must be _____ to guarantee correct behaviour, even if a failure occurs during recovery process.
a) idempotent
b) easy
c) protected
d) all of the mentioned
Answer: a
Explanation: Idempotent – Multiple executions of an operation have the same result as does one execution.
8. The system periodically performs checkpoints that consists of the following operation(s) _____
a) Putting all the log records currently in main memory onto stable storage
b) putting all modified data residing in main memory onto stable storage
c) putting a log record onto stable storage
d) all of the mentioned
Answer: d
Explanation: None.
9. Consider a transaction T1 that committed prior to checkpoint. The <T1 commits> record appears in the log before the <checkpoint> record. Any modifications

made by T1 must have been written to the stable storage either with the checkpoint or prior to it. Thus at recovery time

_____

a) There is a need to perform an undo operation on T1
b) There is a need to perform a redo operation on T1
c) There is no need to perform an undo and redo operation on T1
d) All of the mentioned
Answer: c
Explanation: None.
10. Serializable schedules are ones where

_____

a) concurrent execution of transactions is equivalent to the transactions executed serially
b) the transactions can be carried out one after the other
c) a valid result occurs after execution transactions
d) none of the mentioned
Answer: a
Explanation: None.
11. A locking protocol is one that

a) governs how locks are acquired
b) governs how locks are released
c) governs how locks are acquired and

released
d) none of the mentioned
Answer: c
Explanation: None.
12. The two phase locking protocol consists of _____
a) growing & shrinking phase
b) shrinking & creation phase
c) creation & growing phase
d) destruction & creation phase
Answer: a
Explanation: None.
13. The growing phase is a phase in which?
a) A transaction may obtain locks, but does not release any
b) A transaction may obtain locks, and releases a few or all of them
c) A transaction may release locks, but does not obtain any new locks
d) A transaction may release locks, and does obtain new locks
Answer: a
Explanation: None.
14. The shrinking phase is a phase in which?
a) A transaction may obtain locks, but does not release any
b) A transaction may obtain locks, and releases a few or all of them
c) A transaction may release locks, but does not obtain any new locks

d) A transaction may release locks, and does obtain new locks
Answer: c
Explanation: None.
15. Which of the following concurrency control protocols ensure both conflict serializability and freedom from deadlock?
I) 2-phase locking
II) Timestamp ordering
a) I only
b) II only
c) Both I and II
d) Neither I nor II
Answer: b
Explanation: None.
1. What is a reusable resource?
a) that can be used by one process at a time and is not depleted by that use
b) that can be used by more than one process at a time
c) that can be shared between various threads
d) none of the mentioned
Answer: a
Explanation: None.
2. Which of the following condition is required for a deadlock to be possible?
a) mutual exclusion
b) a process may hold allocated resources while awaiting assignment of other resources
c) no resource can be forcibly removed from

a process holding it
d) all of the mentioned
Answer: d
Explanation: None.
3. A system is in the safe state if _____
a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exist a safe sequence
c) all of the mentioned
d) none of the mentioned
Answer: a
Explanation: None.
4. The circular wait condition can be prevented by _____

a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned
Answer: a
Explanation: None.
5. Which one of the following is the deadlock avoidance algorithm?
a) banker’s algorithm
b) round-robin algorithm
c) elevator algorithm
d) karn’s algorithm
Answer: a

Explanation: None.
6. What is the drawback of banker’s algorithm?
a) in advance processes rarely know how much resource they will need
b) the number of processes changes as time progresses
c) resource once available can disappear
d) all of the mentioned
Answer: d
Explanation: None.
7. For an effective operating system, when to check for deadlock?
a) every time a resource request is made
b) at fixed time intervals
c) every time a resource request is made at fixed time intervals
d) none of the mentioned
Answer: c
Explanation: None.
8. A problem encountered in multitasking when a process is perpetually denied necessary resources is called _____
a) deadlock
b) starvation
c) inversion
d) aging
Answer: b
Explanation: None.
9. Which one of the following is a visual (

mathematical) way to determine the deadlock occurrence?
a) resource allocation graph
b) starvation graph
c) inversion graph
d) none of the mentioned
Answer: a
Explanation: None.
10. To avoid deadlock _____
a) there must be a fixed number of resources to allocate
b) resource allocation must be done only once
c) all deadlocked processes must be aborted
d) inversion technique can be used
Answer: a
Explanation: None.
1. The number of resources requested by a process _____
a) must always be less than the total number of resources available in the system
b) must always be equal to the total number of resources available in the system
c) must not exceed the total number of resources available in the system
d) must exceed the total number of resources available in the system
Answer: c
Explanation: None.
2. The request and release of resources are _____

a) command line statements
b) interrupts
c) system calls
d) special programs
Answer: c
Explanation: None.

3. What are Multithreaded programs?
a) lesser prone to deadlocks
b) more prone to deadlocks
c) not at all prone to deadlocks
d) none of the mentioned
Answer: b
Explanation: Multiple threads can compete for shared resources.
4. For a deadlock to arise, which of the following conditions must hold simultaneously?
a) Mutual exclusion
b) No preemption
c) Hold and wait
d) All of the mentioned
Answer: d
Explanation: None.
5. For Mutual exclusion to prevail in the system _____
a) at least one resource must be held in a non sharable mode
b) the processor must be a uniprocessor rather than a multiprocessor

c) there must be at least one resource in a sharable mode
d) all of the mentioned
Answer: a
Explanation: If another process requests that resource (non – shareable resource), the requesting process must be delayed until the resource has been released.
6. For a Hold and wait condition to prevail _____
a) A process must be not be holding a resource, but waiting for one to be freed, and then request to acquire it
b) A process must be holding at least one resource and waiting to acquire additional resources that are being held by other processes
c) A process must hold at least one resource and not be waiting to acquire additional resources
d) None of the mentioned
Answer: b
Explanation: None.
7. Deadlock prevention is a set of methods _____
a) to ensure that at least one of the necessary conditions cannot hold
b) to ensure that all of the necessary conditions do not hold
c) to decide if the requested resources for a

process have to be given or not
d) to recover from a deadlock
Answer: a
Explanation: None.
8. For non sharable resources like a printer, mutual exclusion _____
a) must exist
b) must not exist
c) may exist
d) none of the mentioned
Answer: a
Explanation: A printer cannot be simultaneously shared by several processes.
9. For sharable resources, mutual exclusion _____
a) is required
b) is not required
c) may be or may not be required
d) none of the mentioned
Answer: b
Explanation: They do not require mutually exclusive access, and hence cannot be involved in a deadlock.
10. To ensure that the hold and wait condition never occurs in the system, it must be ensured that _____
a) whenever a resource is requested by a process, it is not holding any other resources
b) each process must request and be allocated all its resources before it begins its execution

c) a process can request resources only when it has none
d) all of the mentioned
Answer: d
Explanation: c – A process may request some resources and use them. Before it can can request any additional resources, however it must release all the resources that it is currently allocated.
11. The disadvantage of a process being allocated all its resources before beginning its execution is _____
a) Low CPU utilization
b) Low resource utilization
c) Very high resource utilization
d) None of the mentioned
Answer: b
Explanation: None.
12. To ensure no preemption, if a process is holding some resources and requests another resource that cannot be immediately allocated to it _____
a) then the process waits for the resources be allocated to it
b) the process keeps sending requests until the resource is allocated to it
c) the process resumes execution without the resource being allocated to it
d) then all resources currently being held are preempted

Answer: d
Explanation: None.
13. One way to ensure that the circular wait condition never holds is to _____
a) impose a total ordering of all resource types and to determine whether one precedes another in the ordering
b) to never let a process acquire resources that are held by other processes
c) to let a process wait for only one resource at a time
d) all of the mentioned
Answer: a
Explanation: None.
1. Each request requires that the system consider the _____ to decide whether the current request can be satisfied or must wait to avoid a future possible deadlock.
a) resources currently available
b) processes that have previously been in the system
c) resources currently allocated to each process
d) future requests and releases of each process
Answer: a
Explanation: None.
2. Given a priori information about the _____ number of resources of each type that maybe requested for each process, it is

possible to construct an algorithm that ensures that the system will never enter a deadlock state.
a) minimum
b) average
c) maximum
d) approximate
Answer: c
Explanation: None.
3. A deadlock avoidance algorithm dynamically examines the _____ to ensure that a circular wait condition can never exist.
a) resource allocation state
b) system storage state
c) operating system
d) resources
Answer: a
Explanation: Resource allocation states are used to maintain the availability of the already and current available resources.
4. A state is safe, if _____
a) the system does not crash due to deadlock occurrence
b) the system can allocate resources to each process in some order and still avoid a deadlock
c) the state keeps the system protected and safe
d) all of the mentioned

Answer: b
Explanation: None.
5. A system is in a safe state only if there exists a _____
a) safe allocation
b) safe resource
c) safe sequence
d) all of the mentioned
Answer: c
Explanation: None.
6. All unsafe states are _____
a) deadlocks
b) not deadlocks
c) fatal
d) none of the mentioned
Answer: b
Explanation: None.
7. A system has 12 magnetic tape drives and 3 processes : P0, P1, and P2. Process P0 requires 10 tape drives, P1 requires 4 and P2 requires 9 tape drives.
Process
P0
P1
P2
Maximum needs (process-wise: P0 through P 2 top to bottom)
10
4
9

Currently allocated (process-wise)
5
2
2
Which of the following sequence is a safe sequence?
a) P0, P1, P2
b) P1, P2, P0
c) P2, P0, P1
d) P1, P0, P2
Answer: d
Explanation: None.
8. If no cycle exists in the resource allocation graph _____
a) then the system will not be in a safe state
b) then the system will be in a safe state
c) all of the mentioned
d) none of the mentioned
Answer: b
Explanation: None.
9. The resource allocation graph is not applicable to a resource allocation system _____
a) with multiple instances of each resource type
b) with a single instance of each resource type
c) single & multiple instances of each resource type
d) none of the mentioned
Answer: a

Explanation: None.

10. The Banker’s algorithm is _____ than the resource allocation graph algorithm.
a) less efficient
b) more efficient
c) equal
d) none of the mentioned
Answer: a
Explanation: None.
11. The data structures available in the Banker’s algorithm are _____
a) Available
b) Need
c) Allocation
d) All of the mentioned
Answer: d
Explanation: None.
12. The content of the matrix Need is _____
a) Allocation – Available
b) Max – Available
c) Max – Allocation
d) Allocation – Max
Answer: c
Explanation: None.
13. A system with 5 processes P0 through P4 and three resource types A, B, C have A with 10 instances, B with 5 instances, and C with 7

instances. At time t0, the following snapshot has been taken:

Process

P0

P1

P2

P3

P4

Allocation (process-wise : P0 through P4 top TO bottom)

A B C

0 1 0

2 0 0

3 0 2

2 1 1

0 0 2

MAX (process-wise: P0 through P4 top TO bottom)

A B C

7 5 3

3 2 2

9 0 2

2 2 2

4 3 3

Available

A B C

3 3 2

The sequence <P1, P3, P4, P2, P0> leads the system to _____

a) an unsafe state

b) a safe state
c) a protected state
d) a deadlock
Answer: b
Explanation: None.
1. The wait-for graph is a deadlock detection algorithm that is applicable when _____
a) all resources have a single instance
b) all resources have multiple instances
c) all resources have a single 7 multiple instances
d) all of the mentioned
Answer: a
Explanation: None.
2. An edge from process Pi to Pj in a wait for graph indicates that _____
a) Pi is waiting for Pj to release a resource that Pi needs
b) Pj is waiting for Pi to release a resource that Pj needs
c) Pi is waiting for Pj to leave the system
d) Pj is waiting for Pi to leave the system
Answer: a
Explanation: None.

3. If the wait for graph contains a cycle _____
a) then a deadlock does not exist
b) then a deadlock exists

c) then the system is in a safe state
d) either deadlock exists or system is in a safe state
Answer: b
Explanation: None.
4. If deadlocks occur frequently, the detection algorithm must be invoked _____
a) rarely
b) frequently
c) rarely & frequently
d) none of the mentioned
Answer: b
Explanation: None.
5. What is the disadvantage of invoking the detection algorithm for every request?
a) overhead of the detection algorithm due to consumption of memory
b) excessive time consumed in the request to be allocated memory
c) considerable overhead in computation time
d) all of the mentioned
Answer: c
Explanation: None.
6. A deadlock eventually cripples system throughput and will cause the CPU utilization to _____
a) increase
b) drop
c) stay still
d) none of the mentioned

Answer: b
Explanation: None.
7. Every time a request for allocation cannot be granted immediately, the detection algorithm is invoked. This will help identify _____
a) the set of processes that have been deadlocked
b) the set of processes in the deadlock queue
c) the specific process that caused the deadlock
d) all of the mentioned
Answer: a
Explanation: None.
8. A computer system has 6 tape drives, with ‘n’ processes competing for them. Each process may need 3 tape drives. The maximum value of ‘n’ for which the system is guaranteed to be deadlock free is?
a) 2
b) 3
c) 4
d) 1
Answer: a
Explanation: None.
9. A system has 3 processes sharing 4 resources. If each process needs a maximum of 2 units then, deadlock _____
a) can never occur
b) may occur

c) has to occur
d) none of the mentioned
Answer: a
Explanation: None.
10. ‘m’ processes share ‘n’ resources of the same type. The maximum need of each process doesn’t exceed ‘n’ and the sum of all their maximum needs is always less than m+n. In this setup, deadlock _____
a) can never occur
b) may occur
c) has to occur
d) none of the mentioned
Answer: a
Explanation: None.

1. A deadlock can be broken by _____
a) abort one or more processes to break the circular wait
b) abort all the process in the system
c) preempt all resources from all processes
d) none of the mentioned
Answer: a
Explanation: None.
2. The two ways of aborting processes and eliminating deadlocks are _____
a) Abort all deadlocked processes
b) Abort all processes
c) Abort one process at a time until the

deadlock cycle is eliminated
d) All of the mentioned
Answer: c
Explanation: None.
3. Those processes should be aborted on occurrence of a deadlock, the termination of which?
a) is more time consuming
b) incurs minimum cost
c) safety is not hampered
d) all of the mentioned
Answer: b
Explanation: None.
4. The process to be aborted is chosen on the basis of the following factors?
a) priority of the process
b) process is interactive or batch
c) how long the process has computed
d) all of the mentioned
Answer: d
Explanation: None.
5. Cost factors for process termination include _____
a) Number of resources the deadlock process is not holding
b) CPU utilization at the time of deadlock
c) Amount of time a deadlocked process has thus far consumed during its execution
d) All of the mentioned
Answer: c

Explanation: None.
6. If we preempt a resource from a process, the process cannot continue with its normal execution and it must be _____
a) aborted
b) rolled back
c) terminated
d) queued
Answer: b
Explanation: None.
7. To _____ to a safe state, the system needs to keep more information about the states of processes.
a) abort the process
b) roll back the process
c) queue the process
d) none of the mentioned
Answer: b
Explanation: None.
8. If the resources are always preempted from the same process _____ can occur.
a) deadlock
b) system crash
c) aging
d) starvation
Answer: d
Explanation: None.
9. What is the solution to starvation?
a) the number of rollbacks must be included in the cost factor

b) the number of resources must be included in resource preemption
c) resource preemption be done instead
d) all of the mentioned
Answer: a
Explanation: None.