

Section I – Multiple Choice

Answer each of the following multiple choice questions on the *UTT Multiple Choice Sheet* provided by shading the letter that corresponds to the most appropriate response.

- 1) Which of the following options is correct about the windows operating system?
 - a) Windows is a CUI operating system.
 - b) Windows is based on CUI.
 - c) Windows is a GUI operating system.
 - d) None of the these

- 2) The operating system works between
 - a) User and Computer
 - b) Network and User
 - c) One user to another user
 - d) All of the these

- 3) Who is responsible for keeping the process from the program?
 - a) Operating system
 - b) CPU
 - c) Monitor
 - d) All of the these

- 4) To access the services of operating system, the interface is provided by the _____
 - a) System calls
 - b) API
 - c) Library
 - d) Assembly instructions

- 5) BIOS is used?
 - a) By operating system
 - b) By compiler
 - c) By interpreter
 - d) By application software

- 6) A process can be terminated due to _____
- a) Normal exit
 - b) Fatal exit
 - c) Killed by another process
 - d) All of the above
- 7) What is the ready state of a process?
- a) When a 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
- 8) A process waiting to be assigned to a processor is considered to be in _____ state.
- a) Waiting
 - b) Ready
 - c) Terminated
 - d) Running
- 9) A _____ process is moved to the ready state when its time allocation expires.
- a) Blocked
 - b) New
 - c) Running
 - d) Suspended
- 10) As a process enters the system, they are put into the _____ which consists of all the processes in the system.
- a) Job queue
 - b) Ready queue
 - c) Job stack
 - d) Ready stack

- 11) The Banker's algorithm is used
- a) to rectify deadlock
 - b) to detect deadlock
 - c) to prevent deadlock
 - d) to solve deadlock
- 12) The problem with a _____ file is that they slow your computer's operation
- a) Fragmented
 - b) Formatted
 - c) Program
 - d) All of above
- 13) User action such as keystroke or mouse click are referred to as
- a) Interrupt
 - b) Tasks
 - c) Processes
 - d) Event
- 14) What is the method of handling deadlocks?
- a) Use a protocol to ensure that the system will never enter a deadlock state.
 - b) Allow the system to enter the deadlock state and then recover.
 - c) Pretend that deadlocks never occur in the system.
 - d) All of the Above
- 15) The allocation of processors by process management is also known as the CPU
- a) Managing
 - b) Processing
 - c) Planning
 - d) Scheduling
- 16) Which is NOT a state of the process?
- a) Blocked
 - b) Running
 - c) Ready
 - d) Restricted

- 17) Deadlocks can be described more precisely in terms of a directed graph called a
- a) Bar graph
 - b) System resource-allocation graph
 - c) Pie charts
 - d) Line graph
- 18) The chunks of a memory are known as
- a) Sector
 - b) Offset
 - c) Page
 - d) Frame
- 19) The necessary conditions needed before deadlock can occur?
- a) No Mutual Exclusion, Hold and wait, Preemption, Circular Wait
 - b) Mutual Exclusion, No Hold and wait, Preemption, Circular Wait
 - c) Mutual Exclusion, Hold and wait, No Preemption, Circular Wait
 - d) Mutual Exclusion, Hold and wait, Preemption, No Circular Wait
- 20) What hole will allocate in "Worst-Fit" algorithm of memory management?
- a) It allocates the smaller hole than required memory hole
 - b) It allocates the smallest hole from the available memory holes
 - c) It allocates the largest hole from the available memory holes
 - d) It allocates the exact same size memory hole
- 21) The core of operating system is:
- a) Unix
 - b) Kernel
 - c) Command.com
 - d) None of these
- 22) Virtual Memory is
- a) Extremely Large Main memory
 - b) Extremely Large Secondary memory
 - c) An illusion of extremely large main memory
 - d) An illusion of extremely large secondary memory

- 23) Swapping
- a) Works best with many small partitions
 - b) Allows many programs to use memory simultaneously
 - c) Allows each program in turn to use the memory
 - d) Does not work with overlaying
- 24) A program in execution is
- a) A Paging
 - b) A Process
 - c) A virtual memory
 - d) A Demand Page
- 25) FIFO scheduling is a type of:
- a) Pre-emptive scheduling
 - b) Non pre-emptive scheduling
 - c) Deadline scheduling
 - d) None of the above
- 26) What does Belady's Anomaly relate to?
- a) Page Replacement Algorithm
 - b) Memory Management Algorithm
 - c) Deadlock Prevention Algorithm
 - d) Disk Scheduling Algorithm
- 27) A Round-robin scheduling algorithm will simply put the new process at _____
- a) The tail of the ready queue
 - b) The head of the ready queue
 - c) Head and tail of the ready queue
 - d) None of the above

- 28) In which of the following Page replacement policy, at every page fault the page replacement policy replaces the page that was loaded into memory earlier than any other page of the process?
- a) LRU Page Replacement Algorithm
 - b) FIFO Page Replacement Algorithm
 - c) Optimal Page Replacement Algorithm
 - d) NRU Page Replacement Algorithm
- 29) A disk scheduling algorithm in an operating system causes the disk arm to move back and forth across the disk surface in order to service all requests in its path. This is a
- a) First come first served
 - b) Shortest Seek Time First (SSTF)
 - c) Scan
 - d) FIFO
- 30) Suppose requests have recently arrived for data on cylinders 25, 46, 12, and 3, in that order, and that the read-write head is currently at cylinder 20. If the disk scheduling policy is SSTF, the outstanding requests will be serviced in the order
- a) 25, 46, 12, 3
 - b) 3, 12, 25, 46
 - c) 25, 12, 3, 46
 - d) 25, 46, 3, 12

Section 2 – Answer ALL Questions**QUESTION 1**

- a) Explain what the difference between Memory Allocation and Contiguous Memory Allocation
(4 Marks)

The table below shows five (5) memory partitions and four (4) processes/jobs:

MEMORY PARTITIONS	PROCESS/JOB
100 Kb	212 Kb
500 Kb	417 Kb
200 Kb	112 Kb
300 Kb	426 Kb
600 Kb	

- b) Place the processes/jobs below using the following algorithms:

- 1) First -fit (2 Marks)
- 2) Best-fit (2 Marks)
- 3) Worse-fit (2 Marks)
- 4) Next-fit (2 Marks)

- c) Which algorithm makes the least and most efficient use of memory? Explain why?
(4 Marks)

- d) List one (1) advantage and one (1) disadvantage for each of the four (4) algorithms in Part (b) above
(4 Marks)

QUESTION 2

a) Explain Disk Arm Scheduling Algorithm

(4 Marks)

b) Consider a disk with 200 tracks and the queue has random requests from different processes in the following order:

55, 58, 39, 18, 90, 160, 150, 38, 184

Initially the arm is at track 100.

Find the Total Seek Length using the following algorithms:

a) FCFS

(4 Marks)

b) SSTF

(4 Marks)

c) SCAN

(4 Marks)

d) C-SCAN

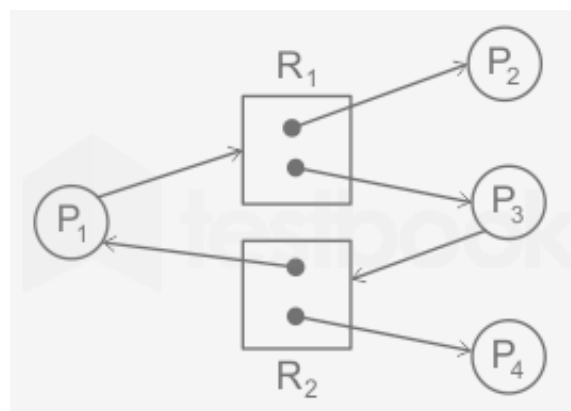
(4 Marks)

QUESTION 3

The following Resource Allocation Graph shows a set of four processes and two resources with two units each.

You are required to explain the diagram and convert it into an allocation and request matrix.

(10 Marks)



QUESTION 4