Sample Questions

Department of Information Technology

**Subject Name:** Operating System **Course Code:** ITC403

**Semester: IV**

Multiple Choice Questions

|  | **Choose the correct option for following questions. All the Questions carry equal marks** |
| --- | --- |
| 1. | To access the services of operating system, the interface is provided by the \_\_\_\_\_\_ |
| Option A: | API |
| Option B: | System calls |
| Option C: | Library |
| Option D: | Assembly instructions |
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| 2. | It is mediator between computer hardware and software. |
| Option A: | Operating system |
| Option B: | System calls |
| Option C: | Process |
| Option D: | Open system |
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| 3. | What is Process Control Block? |
| Option A: | Process type variable |
| Option B: | Data structure |
| Option C: | A secondary storage section |
| Option D: | A block in memory |
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| 4. | What is the ready state of a process? |
| Option A: | when process is scheduled to run after some execution |
| Option B: | when process is unable to run until some task has been completed |
| Option C: | when process is using the CPU |
| Option D: | Process is removed from all queues |
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| 5. | What is dispatch Latency? |
| Option A: | The speed of dispatching a process from running to the ready state |
| Option B: | The time of dispatching a process from running to ready state and keeping the CPU idle |
| Option C: | The time to stop one process and start running another one. |
| Option D: | The speed of dispatching process from ready to terminate state |
| 6. | What is a semaphore? |
| Option A: | Is a binary Mutex. |
| Option B: | Must be accessed from only one process |
| Option C: | Can be accessed from multiple processes |
| Option D: | Must be accessed from only multiple user |
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| 7. | A thread is also called\_\_\_ |
| Option A: | Heavy weight processes |
| Option B: | Light weight processes |
| Option C: | Program |
| Option D: | Process |
| 8. | Deadlock prevention is a set of methods\_\_\_\_\_\_\_\_ |
| Option A: | To ensure that at least one of necessary conditions cannot hold |
| Option B: | To ensure that all of the necessary conditions do not hold |
| Option C: | To decide if requested resources for a process have to be given or not |
| Option D: | To recover from deadlock |
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| 9. | Which of the following two operations are provided by IPC facility? |
| Option A: | Write and delete facility |
| Option B: | Delete and receive message |
| Option C: | Send and delete message |
| Option D: | Receive and send message |
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| 10. | Which one of the following is deadlock avoidance algorithm? |
| Option A: | Banker’s algorithm |
| Option B: | Round robin algorithm |
| Option C: | Election algorithm |
| Option D: | Dijekstra algorithm |
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| 11. | In segmentation, each address is specified by \_ |
| Option A: | A segment number and offset |
| Option B: | An offset and value |
| Option C: | A value and segment number |
| Option D: | A key and value |
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| 12. | What is dynamic loading? |
| Option A: | Loading multiple routines dynamically |
| Option B: | Loading a routine only when it is called |
| Option C: | Loading multiple routines randomly |
| Option D: | Loading a routine randomly |
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| 13. | Consider a logical address space of eight pages of 1024 words each, mapped onto a physical memory of 32 frames. How many bits are there in the logical address? |
| Option A: | 13 |
| Option B: | 16 |
| Option C: | 10 |
| Option D: | 8 |
|  |  |
| 14. | \_\_\_\_\_\_\_\_\_chooses the block that is closest in size to the request. |
| Option A: | First fit |
| Option B: | Next fit |
| Option C: | Worst fit |
| Option D: | Best fit |
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| 15. | CPU fetches the instructions from memory according to the value of \_ |
| Option A: | Status register |
| Option B: | Instruction register |
| Option C: | Program counter |
| Option D: | Program status word |
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| 16. | Device controller works like |
| Option A: | An interface between device and device driver |
| Option B: | An interface between human and device |
| Option C: | An interface between human and OS |
| Option D: | An interface between device and OS |
|  |  |
| 17. | \_\_\_\_\_\_\_\_\_technique uses striping and dedicates one drive to storing parity information. |
| Option A: | RAID 1 |
| Option B: | RAID2 |
| Option C: | RAID 3 |
| Option D: | RAID 4 |
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| 18. | In this algorithm the disk arm goes as far as the final request in each direction, and then reverses direction immediately without going to the end of the disk. |
| Option A: | LOOK |
| Option B: | SCAN |
| Option C: | S-SCAN |
| Option D: | C-LOOK |
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| 19. | In real time operating system\_\_\_\_\_\_\_\_\_\_ |
| Option A: | All processes have same priority |
| Option B: | A task must be serviced by its deadline period |
| Option C: | Process scheduling can be done only once |
| Option D: | Kernel is not required |
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| 20. | Network Operating system runs on\_\_\_\_\_\_\_\_. |
| Option A: | server |
| Option B: | Every system in server |
| Option C: | Both server and every system in network |
| Option D: | On system not in network |
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| 21. | What is operating system? |
| Option A: | Collection of programs that manages hardware resources |
| Option B: | System service provider to the application programs |
| Option C: | Interface between user and hardware |
| Option D: | Collection of programs that manages Software resources |
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| 22. | Which of the following is not the Network Operating system ? |
| Option A: | Ubuntu |
| Option B: | Windows 7 |
| Option C: | Unix |
| Option D: | Mach |
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| 23. | --- provides the interface to access the services of operating system. |
| Option A: | System calls |
| Option B: | API |
| Option C: | Library |
| Option D: | Command interpreter |
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| 24. | The process enters from ------- state to  ------ when interrupt occurs. |
| Option A: | Ready, Running |
| Option B: | Running, Waiting |
| Option C: | Running, Ready |
| Option D: | Waiting, Running |
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| 25. | Which of the statement is correct from the following statements?  I. The long-term scheduler selects the process form the job pool and loads into the main memory  II. The short-term scheduler selects the process from waiting queue and allocates to the processor for execution  III. The execution frequency of short-term scheduler is more than long term scheduler  IV. The medium-term scheduler executes less frequently than long term scheduler |
| Option A: | I and II |
| Option B: | II and III |
| Option C: | III and IV |
| Option D: | I and III |
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| 26. | In RR scheduling algorithm if the time quantum  is increased more, then it acts as a ----- algorithm |
| Option A: | FCFS |
| Option B: | SJF |
| Option C: | Multilevel Queue |
| Option D: | Priority |
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| 27. | In which of the load balancing the specific task find for imbalance on each processor, if found then moves processes form one overloaded processor to Idle one. |
| Option A: | Pull Migration |
| Option B: | Push Migration |
| Option C: | Mutually exclusive Pull and Push Migration |
| Option D: | Hyper threading Algorithm |
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| 28. | The productive operating system, checks for the deadlock -------- |
| Option A: | Every time the process requests recourse |
| Option B: | After a specific time interval |
| Option C: | When a system is in unsafe state |
| Option D: | Every time a resource request is made at a fixed time interval |
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| 29. | In a certain application a value of counting semaphore is 17. The following operations were completed on the semaphores in the given order 2P, 20P, 5V, 10V, 10P, 2P. What would be the new value of counting semaphore? |
| Option A: | 2 |
| Option B: | 10 |
| Option C: | 0 |
| Option D: | 3 |
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| 30. | Which of the statements are true in case of recovery from Deadlock ?  I Ignore the processes which are in deadlock state  II Abort all resources which are in deadlock  III Abort one process at a time until deadlock cycle is eliminated  IV Abort the process which requests the deadlocked resources |
| Option A: | Only III |
| Option B: | Only IV |
| Option C: | II and III |
| Option D: | Only IV |
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| 31. | In dynamic storage allocation problem, the --- fit and --- fit are preferable than ---- fit. |
| Option A: | Worst, First, Best |
| Option B: | Best, First, Worst |
| Option C: | Worst, Best, First |
| Option D: | Worst, First, Best |
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| 32. | Which of the sentence is false?  I Valid bit indicates that the page is in process's logical address space  II Valid and Invalid bits provides protection.  III Invalid bit indicates that the page is not in process's logical address space  IV Shared pages do not have the Valid, Invalid bits |
| Option A: | IV |
| Option B: | III |
| Option C: | I and II |
| Option D: | I and III |
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| 33. | Generally, each process has an associated ------ |
| Option A: | Segment Table |
| Option B: | Page Table |
| Option C: | Cache |
| Option D: | Virtual Memory |
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| 34. | Which of the following are the likely causes of thrashing?  I. There are too many applications in the system  II. The segment size was very small  III. First in first out policy is followed  IV. Least recently used policy for page replacement is used |
| Option A: | II and IV |
| Option B: | I and III |
| Option C: | II and III |
| Option D: | I and IV |
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| 35. | After an allocation of space using the worst-fit policy the number of holes in memory --- . |
| Option A: | Increases by one |
| Option B: | Decreases by one |
| Option C: | Remains same |
| Option D: | Memory Reduces by the process size |
|  |  |
| 36. | If there are 32 segments, each of size 1KB ,then the logical address should have ---- |
| Option A: | 13 bit |
| Option B: | 14 bit |
| Option C: | 15 bit |
| Option D: | 16 bit |
|  |  |
| 37. | ----- causes file system fragmentation. |
| Option A: | Unused space or single file are not contiguous |
| Option B: | Used space is not contiguous |
| Option C: | Used space is non-contiguous |
| Option D: | Multiple files are non-contiguous |
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| 38. | Which of the statement is true |
| Option A: | RAID level 0 supports byte stripping |
| Option B: | RAID level 1 allows bit stripping |
| Option C: | RAID level 0 supports no mirroring and RAID 1 supports mirroring with block striping |
| Option D: | RAID protects against data protection. |
|  |  |
| 39. | The number of applications in any given task at a particular time in Android are ---- |
| Option A: | One |
| Option B: | Many |
| Option C: | Few |
| Option D: | Zero |
| 40. | Which of the following which is not the characteristics of embedded system |
| Option A: | Real time operation |
| Option B: | Reactive Operation |
| Option C: | Continuity |
| Option D: | I/O device flexibility |
|  |  |
| 41. | Which process state will do instruction execution? |
| Option A: | Running state |
| Option B: | Waiting state |
| Option C: | Ready state |
| Option D: | Halt state |
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| 42. | Which data structure is associated with process? |
| Option A: | Process Common Batch |
| Option B: | Process Control Block |
| Option C: | Process Counter Block |
| Option D: | Program Control Block |
|  |  |
| 43. | What is the job of Program counter? |
| Option A: | Iterate the few instructions. |
| Option B: | Print the next instruction. |
| Option C: | Stop the execution of next instruction. |
| Option D: | Address of next instruction to be executed is stored. |
|  |  |
| 44. | Select pair of atomic operations associated with Semaphore S. |
| Option A: | exit () and print () |
| Option B: | wait () and signal () |
| Option C: | length () and wait () |
| Option D: | wait() and get() |
|  |  |
| 45. | The necessary conditions needed before deadlock can occur? |
| Option A: | No Mutual Exclusion, Hold and wait, Preemption, Circular Wait |
| Option B: | Mutual Exclusion, No Hold and wait, Preemption, Circular Wait |
| Option C: | Mutual Exclusion, Hold and wait, No Preemption, Circular Wait |
| Option D: | Mutual Exclusion, Hold and wait, Preemption, No Circular Wait |
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| 46. | Which of the following is not allocation method of a disk space? |
| Option A: | Contiguous allocation |
| Option B: | Linked allocation |
| Option C: | Indexed allocation |
| Option D: | Parallel allocation |
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| 47. | Page called into memory only when it is needed is called as |
| Option A: | Demand Memory |
| Option B: | Demand Paging |
| Option C: | Demand Page Fault |
| Option D: | Demand Segmentation |
|  |  |
| 48. | Page-Table base register (PTBR) indicates |
| Option A: | Page Table Base address |
| Option B: | Paging File address |
| Option C: | Main Memory address |
| Option D: | Virtual Memory address |
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| 49. | Consider the following table of arrival time and burst time for three processes P0, P1 and P2.   | Process | AT | BT | | --- | --- | --- | | P0 | 0 ms | 9 ms | | P1 | 1 ms | 4 ms | | P2 | 2 ms | 9 ms |   The pre-emptive shortest job first scheduling algorithm is used. Scheduling is carried out only at arrival or completion of processes. What is the average waiting time for the three processes? |
| Option A: | 5.0 ms |
| Option B: | 4.33 ms |
| Option C: | 7.88 ms |
| Option D: | 5.2 ms |
|  |  |
| 50. | Who is responsible to release write lock in reader-writer process? |
| Option A: | First reader |
| Option B: | Last reader |
| Option C: | First writer |
| Option D: | No reader as well as writer |
|  |  |
| 51. | The DMA transfers are performed by a control circuit called as |
| Option A: | Device interface |
| Option B: | DMA controller |
| Option C: | Data controller |
| Option D: | Device Manager |
|  |  |
| 52. | The defective sectors on the disks are often called as…… |
| Option A: | Good blocks |
| Option B: | Bad sectors |
| Option C: | Bad blocks |
| Option D: | Blocked sectors |
|  |  |
| 53. | Response time is very crucial in …….OS. |
| Option A: | Batch OS |
| Option B: | Mobile OS |
| Option C: | Cloud based OS |
| Option D: | Real-Time OS |
|  |  |
| 54. | In which system, tasks are equally divided between all the nodes? |
| Option A: | client/server systems |
| Option B: | peer to peer systems |
| Option C: | Virtual system |
| Option D: | Master slave system |
|  |  |
| 55. | Consider a disk queue with requests for I/O to blocks on cylinders.  98 183 37 122 14 124 65 67. Considering SSTF (shortest seek time first) scheduling, the total number of head movements is, if the disk head is initially at 53 is? |
| Option A: | 236 |
| Option B: | 237 |
| Option C: | 240 |
| Option D: | 200 |
|  |  |
| 56. | Which of the following is synchronization tool? |
| Option A: | Thread |
| Option B: | Catch memory |
| Option C: | Semaphore |
| Option D: | Socket |
|  |  |
| 57. | Which one of the following error will not be handle by the operating system? |
| Option A: | power failure |
| Option B: | lack of paper in printer |
| Option C: | connection failure in the network |
| Option D: | removal of malicious code |
|  |  |
| 58. | A Process Control Block (PCB) does not contain which of the following? |
| Option A: | Code |
| Option B: | Stack |
| Option C: | MBR |
| Option D: | Data |
|  |  |
| 59. | Peterson’s solution is applicable to …... |
| Option A: | Only two processes |
| Option B: | One process |
| Option C: | Three Processes |
| Option D: | More than two processes |
|  |  |
| 60. | A file control block does not contain the information about \_\_\_\_\_\_\_\_\_\_\_\_ |
| Option A: | File permissions |
| Option B: | Virtual file memory |
| Option C: | File ownership |
| Option D: | Location of file contents |

Descriptive Questions

| **10 marks each** |
| --- |
| 1. What is an operating system? What is need of operating system? Explain various functions of an OS. |
| 2. Explain file allocation methods in detail with proper diagram. |
| 3. Consider the following set of processes indicated as  **(process name, Arrival time, burst time)** for the following  (P1,0,6),  (P2,1,4),  (P3,3,5),  (P4, 5, 3).  Draw the Gantt charts illustrating the execution of these processes using preemptive and non-preemptive SJF and FCFS. Calculate average turnaround time, average waiting time in each case. |
| 4. Calculate hit and miss for the following string using page replacement policies- FIFO, LRU, Optimal with frame size=4. Reference string is given as 1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3. |
| 5. Explain the necessary conditions for deadlock. Explain how a resource allocation graph determines a deadlock. |
| 6. Explain paging in detail. Describe how logical address is converted into physical address. |
| 7. Consider following processes. Calculate the Waiting and Turnaround time for each process using SJF and RR algorithm. Time quantum is 3.   | Process Id | Burst Time | Arrival Time | | --- | --- | --- | | P1 | 8 | 0 | | P2 | 4 | 1 | | P3 | 9 | 2 | | P4 | 5 | 3 | |
| 8. What is a thread? How multithreading is beneficial? Compare and contrast different multithreading models. |
| 9. What is semaphore and its types? How the classic synchronization problem -Dining philosopher is solved using semaphores? |
| 10. Consider the page reference string 1,2,3,5,2,4,5,6,2,1,2,3,7,6,3,2,1,2,3,6. Calculate the Page fault using 1. Optimal 2. LRU 3. FIFO algorithms for a memory with three frames. |
| 11. Consider the snapshot of a system. Answer the following questions based on Bankers Algorithm   |  | Allocation | Max | Available | | --- | --- | --- | --- | |  | ABCD | ABCD | ABCD | | P0 | 0012 | 0012 | 1520 | | P1 | 1000 | 1750 |  | | P2 | 1354 | 2356 |  | | P3 | 0632 | 0652 |  | | P4 | 0014 | 0656 |  |   i. What is the content of Need Matrix?  ii. Is the system is safe state? What is the safe sequence? |
| 12. What is open-source operating system? What are the design issues of Mobile operating system and Real time operating system? |
| 13. Explain how process will be represented using PCB. Elaborate role of PCB in context switching. |
| 14. Explain concept of critical section. Explain reader- writer problem using semaphore. |
| 15. Discuss hardware support required for demand paging. What is page fault ratio using optimal page replacement for reference string given below using page frame size=4.  1,2,3,4,5,3,4,1,6,7,8,7,8,9,7,8,9,5,4,5,4,2 |
| 16. Consider following snapshot of a system.  Answer the following questions using Banker’s algorithm.  a) Find Need Matrix.  b) Is the system in safe state. Find safety sequence.  c)If request from process P1 arrives for (0,4,2,0). Can this request be granted immediately? |
| 17. Suppose that a disk drive has 5000 cylinders, numbered from 0 to 4999. The drive is currently serving the request at cylinder 143 and previous request was at cylinder 125. Queue of pending request in FIFO order is  86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130.  Calculate the Seek time using following disk scheduling algorithm.  a) FIFO b) SSTF c) SCAN d) LOOK |
| 18. What are the features of Mobile OS? Compare any two types of Mobile OS. Discuss process management in mobile OS. |