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
2.	It is mediator between computer hardware and software.
Option A:	Operating system
Option B:	System calls
Option C:	Process
Option D:	Open system
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
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
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
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
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
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
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
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
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
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
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
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

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
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
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
22.	Which of the following is not the Network Operating system ?
Option A:	Ubuntu
Option B:	Windows 7
Option C:	Unix
Option D:	Mach
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
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
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
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
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
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
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
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
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
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
33.	Generally, each process has an associated ------
Option A:	Segment Table
Option B:	Page Table
Option C:	Cache
Option D:	Virtual Memory
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
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
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
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
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
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
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.

Process	Allocation				Max				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

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.