National University of Computer & Emerging Sciences
Karachi Campus

OPERATING SYSTEM
Challenge Exam
Fall 2016

Date	
Time	60 Minutes
Instruction	MCQs type exam, you need to select (□) the most appropriate answer possible among all choices. Question will not be marked if multiple options are selected or re-attempted a choice. Keep this front-page upside. Start the exam once you are asked to.
Std-ID/Name	

1. Which of the following are likely component of operating system.
1) file editor
2) Web browser
3) scheduler and device driver
4) All of the above

2. Operating system abstracts and arbitrate the computer system. In the following options, indicate if they are the examples of arbitration.

1)distributing memory between multiple processes
2)supporting different types of speakers.
3)interchangeable access of hard disk
4) None of the above

3. Ahmed is trying to make a system call for the following purposes. Identify the case where performance of a system will be degraded by making a system call.

1) for creation of processes
2) for performing heavy math-intensive calculations.
3) for communication between processes.
4) for memory management
5) None of the above

4.Remote Procedure Calls are used :

a) for communication between two processes remotely different from each other on the same system
b) for communication between two processes on the same system
c) for communication between two processes on separate systems
d) None of these

5. If it takes m1 seconds to switch from user mode to kernel mode and m2 seconds for context switching in between the process p1 and process p2 than what will be relation of process p1 and process p2.

1) t1 < t2
2) t1 = t2
3) t1 > t2
4) Nothing can be said about their relation

6. For the given code fragment total number of processses will be

```
int main()
{
for(int i = 0 ; i < 10 ; i++)
{
pid = fork();
if(pid)
break;
}
}
```

a) 11
b) 10
c)21
d)22

7. Consider a system having three processes p0 ,p1 and p2 arrive at same time interval with CPU burst time 2 , 4 and 8. Consider an algorithm which prioritize processes according to longest remaining time process. Processes are preempted when the remaining time of currently running process is smaller than any of the process available in ready queue. What will be the average turnaround time.

1) 13
2) 14
3) 15
4) 16

8. Consider there are three process in a ready queue p0 , p1 and p2 with a CPU burst time 2, 4, 10 arrive at the same time. Scheduler uses shortest remaining time first algorithm to schedule these processes. Process p0, p1 and p2 uses 20% of execution time in doing I/O , 70% of execution time in using CPU and last 10% of execution time in doing I/O. When processes busy in I/O operation then scheduler dispatches a new process from reading. Calculate CPU idle time.

1) 0%
2) 10.6%
3) 30.0%
4) 89.4%

9. Which of the following algorithm leads towards starvation.
1) FIFO
2) Round Robin
3) SJF
4) None of the above

10. Round robin with too much large quantum time is equivalent to:

1) FIFO
2) Shortest job first with preemption
3) Shortest job first
4) Longest job first

11. You are designing an algorithm to schedule processes with a policy to schedule the process on the basis of their waiting time. Consider no process will stuck in doing I/O operations. Your algorithm will continuously check the ready queue after passing M seconds for scheduling processes. This algorithm is equivalent to :
1) FCFS
2) Round Robin
3) Shortest job first
4) SRTF

12. Which of the following is responsible to initiate all jobs of your system.

1) getty()
2) init()
3) ssh()
4) None of the above

13. Which of the following is responsible to make a duplicate copy of your process in windows.

1) fork()
2) Createprocess()
3) creatprocess()

4) None of the above

14.Which of the following hardware is responsible to provide protection to process?

1) base register
2) relocation register
3) MMU
4) All of the above

15. In which type of address binding scheme programs are allowed to move from one memory segment to other while execution.

1) compile time
2) load time
3)execution time
4) All of the above

16.Which mechanisms are responsible to provide protection in your system.

1) dual mode operations
2) base-limit register
3) Both 1 and 2
4) None of the above

17. External fragmentation may be in
1) first fit
2) best fit
3) both of the above
4) None of the above

18. Which of the following algorithm will suffer from belady's anamoly:
1) first fit
2) best fit
3) worst fit
4) All of the above

19) Increasing the size of memory will increase the speed of your system for the reason.

1) larger memory will have highest speed
2) fewer page faults occur
3) segmentation faults will decrease
4) none of the above

20. Scheme allows physical address space of a process to be noncontiguous.

1) paging
2) segmentation
3) Variable size partitioning
4) 1 and 2
5) All of the above

21. What might be solution of external fragmentation

1) compaction

2) paging
3) segmentation
4) All of the above

22. Which type of multiprocessor is self scheduling?

1) symmetric multiprocessor
2) asymmetrical multiprocessor
3) both of the above
4) None of the above

23. We describe a protocol of input device communication below. a. Each device has a distinct address b. The bus controller scans each device in sequence of increasing address value to determine if the entity wishes to communicate. c. The device ready to communicate leaves it data in IO register. d. The data is picked up and the controller moves to step-a above. Identify the form of communication best describes the IO mode amongst the following:

1) programming mode
2) polling
3) Interrupt
4) Direct memory access

24. 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

25) Process synchronization can be done on

a) hardware level
b) software level
c) both (a) and (b)
d) none of the mentioned

26. Earliest deadline first algorithm assigns priorities according to :

a) periods
b) deadlines
c) burst times
d) None of these

27. A process P1 has a period of 50 and a CPU burst of t1 = 25, P2 has a period of 80 and a CPU burst of 35. The total CPU utilization is :

a) 0.90
b) 0.74
c) 0.94
d) 0.80

28. 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 these

29. 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

30. 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 these

31. The main disadvantage of spinlocks is that :

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

32. Applying the LRU page replacement to the following reference string :
1 2 4 5 2 1 2 4
The main memory can accommodate 3 pages and it already has pages 1 and 2. Page 1 came in before page 2.
How many page faults will occur ?

a) 2
b) 3
c) 4
d) 5

33. In ..... only one process at a time is allowed into its critical section, among all processes that have critical sections for the same resource.

a) Mutual Exclusion
b) Synchronization
c) Deadlock
d) Starvation

34. In ..... messages are not send directly from sender to receiver but rather are sent to a shared data structure consisting queues that can temporarily hold messages.

a) direct addressing
b) indirect addressing
c) one-to-one-addressing
d) one-to-many addressing

35. A page fault occurs when :

a) a page gives inconsistent data
b) a page cannot be accesses due to its absence from memory
c) a page is invisible
d) All of these

36) The _____ is used as an index into the page table.

a) frame bit
b) page number
c) page offset
d) frame offset

37) A process can be

a) single threaded
b) multi threaded
c) both (a) and (b)
d) none of the mentioned

38) The segment base contains the :

a) starting logical address of the process
b) starting physical address of the segment in memory
c) segment length
d) None of these

39) For large data transfers, _____ is used.

a) DMA
b) programmed I/O
c) controller register
d) None of these

40) The valid – invalid bit, in this case, when valid indicates :

a) the page is legal
b) the page is illegal
c) the page is in memory
d) the page is not in memory
e) a and d