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Group

Operating System Fundamentals Exam Answer Sheet

Time: 90 minutes

(Mark ONE answer only!) Ex. A ☐ B ☒ C ☐ D ☐

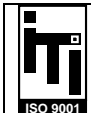
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Q. 1 Choose the Best Answer [1.5 points each]

- 1) **Information about a process is maintained in a _____.**
 - a) Stack
 - b) Translation Lookaside Buffer
 - c) Process Control Block
 - d) Program Control Block
- 2) **Identify the odd thing in the services of operating system.**
 - a) Accounting
 - b) Protection
 - c) Error detection and correction
 - d) Dead lock handling
- 3) **In _____ OS, the response time is very critical.**
 - a) Multitasking
 - b) Batch
 - c) Online
 - d) Real-time
- 4) **Real time systems are _____.**
 - a) Primarily used on mainframe computers
 - b) Used for monitoring events as they occur
 - c) Used for program development
 - d) Used for real time interactive users
- 5) **When Interrupt occurs, control is immediately transferred to _____.**
 - a) Interrupt Vector
 - b) Interrupt Request
 - c) Interrupt Handler
 - d) All of the above
- 6) **Services Provided by the Operating System:**
 - a) Collect statistics
 - b) Error detection
 - c) Grant request
 - d) All of the above
- 7) **Inter process communication can be done through _____.**
 - a) Mails
 - b) Messages
 - c) System calls
 - d) Traps
- 8) **In Priority Scheduling a priority number (integer) is associated with each process. The CPU is allocated to the process with the highest priority (smallest integer = highest priority). The problem of, Starvation ? low priority processes may never execute, is resolved by _____.**
 - a) Terminating the process.
 - b) Aging
 - c) Mutual Exclusion
 - d) Semaphore
- 9) **CPU performance is measured through _____.**
 - a) Throughput
 - b) MHz
 - c) Flaps
 - d) None of the above
- 10) **Which of the following is contained in Process Control Block (PCB)?**
 - a) Process Number
 - b) List of Open files
 - c) Memory Limits
 - d) All of the Above
- 11) **Software is a program that directs the overall operation of the computer, facilitates its use and interacts with the user. What are the different types of this software ?**
 - a) Operating system
 - b) System software
 - c) Utilities
 - d) All of the above

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12) A _____ is a software that manages the time of a microprocessor to ensure that all time critical events are processed as efficiently as possible. This software allows the system activities to be divided into multiple independent elements called tasks.

- a) Kernel
- b) Shell
- c) Processor
- d) Device Driver

13) The primary job of the operating system of a computer is to _____.

- a) Command Resources
- b) Manage Resources
- c) Provide Utilities
- d) Be user friendly

14) With the round robin CPU scheduling in a time-shared system _____.

- a) Using very large time slice degenerates in to first come first served algorithm
- b) Using extremely small time slices improve performance
- c) Using extremely small time slices degenerate in to last in first out algorithm
- d) Using medium sized time slices leads to shortest request time first algorithm

15) Which of the following is a criterion to evaluate a scheduling algorithm?

- a) CPU Utilization: Keep CPU utilization as high as possible.
- b) Throughput: number of processes completed per unit time.
- c) Waiting Time: Amount of time spent ready to run but not running.
- d) All of the above

16) Super computers typically employ _____.

- a) Real time Operating system
- b) Multiprocessors OS
- c) Desktop OS
- d) None of the above

17) What is a shell?

- a) It is a hardware component
- b) It is a command interpreter
- c) It is a part in compiler
- d) It is a tool in CPU scheduling

18) The operating system manages _____.

- a) Memory
- b) Processor
- c) Disk and I/O devices
- d) All of the above

19) The Hardware mechanism that enables a device to notify the CPU is called _____.

- a) Polling
- b) Interrupt
- c) System Call
- d) None of the above

20) Process State is stored in _____.

- a) Process Control block
- b) Inode
- c) File Allocation Table
- d) None of the above

21) A binary semaphore

- a) has the values one or zero
- b) is essential to binary computers
- c) is used only for synchronization
- d) is used only for mutual exclusion

22) A program at the time of executing is called _____.

- a) Dynamic program
- b) Static program
- c) Binded Program
- d) A Process

23) _____ OS pays more attention on the meeting of the time limits.

- a) Distributed
- b) Network
- c) Real time
- d) Online

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24) A process said to be in _____ state if it was waiting for an event that will never occur.

- a) Safe
- b) Unsafe
- c) Starvation
- d) Dead lock

25) A thread is a _____ process .

- a) Heavy Weight
- b) Mutliprocess
- c) Inter Thread
- d) Light weight

26) A major problem with priority scheduling is _____.

- a) Definite blocking
- b) Starvation
- c) Low priority
- d) None of the above

27) It is not the layer of the Operating system.

- a) Kernel
- b) Shell
- c) Application program
- d) Critical Section

28) _____ provide the interface between a running program and the operating system.

- a) Editors
- b) Compilers
- c) System Call
- d) System Programs

29) Mutual exclusion

- a) if one process is in a critical region others are excluded
- b) prevents deadlock
- c) requires semaphores to implement
- d) is found only in the Windows NT operating system

30) Which scheduler controls the degree of multiprogramming?

- a) Short term scheduler
- b) Long term scheduler
- c) Middle term scheduler
- d) None of the above

31) The state of a process after it encounters an I/O instruction is _____.

- a) Ready
- b) Blocked/Waiting
- c) Idle
- d) Running

32) In one of the deadlock prevention methods, impose a total ordering of all resource types, and require that each process requests resources in an increasing order of enumeration. This violates the _____ condition of deadlock

- a) Mutual exclusion
- b) Hold and Wait
- c) Circular Wait
- d) No Preemption

33) A scheduling algorithm is fair

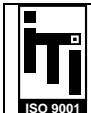
- a) if no process faces starvation
- b) if a process is starved, detect it and run it with high priority
- c) if it uses semaphores
- d) only if a queue is used for scheduling

34) Semaphore can be used for solving _____.

- a) Wait & signal
- b) Deadlock
- c) Synchronization
- d) Priority

35) Round robin scheduling is essentially the preemptive version of _____.

- a) FIFO
- b) Shortest job first
- c) Shortest remaining
- d) Longest time first

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36) Maximize throughput, minimize response time, and accommodate as many users as possible is considered as:

- a) Fairness
- b) Efficiency
- c) Differential responsiveness
- d) All of the above

37) Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);---;signal(Q);signal(S); respectively. The above situation depicts a _____ .

- a) Semaphore
- b) Deadlock
- c) Signal
- d) Interrupt

38) Which is not the state of the process ?

- a) Blocked
- b) Running
- c) Ready
- d) Privileged

39) The solution to Critical Section Problem is : Mutual Exclusion, Progress and Bounded Waiting.

- a) The statement is false
- b) The statement is true.
- c) The statement is contradictory.
- d) None of the above

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

- a) Output
- b) Throughput
- c) Efficiency
- d) Capacity

41) Which technique was introduced because a single job could not keep both the CPU and the I/O devices busy?

- a) Time-sharing
- b) SPOOLing
- c) Preemptive scheduling
- d) Multiprogramming

42) FIFO scheduling is _____.

- a) Preemptive Scheduling
- b) Non Preemptive Scheduling
- c) Deadline Scheduling
- d) Fair share scheduling

43) Switching the CPU to another Process requires to save state of the old process and loading new process state is called as _____.

- a) Process Blocking
- b) Context Switch
- c) Time Sharing
- d) None of the above

44) The Banker's algorithm is used

- a) to prevent deadlock in operating systems
- b) to detect deadlock in operating systems
- c) to rectify a deadlocked state
- d) none of the above

45) _____ is a high level abstraction over Semaphore.

- a) Shared memory
- b) Message passing
- c) Monitor
- d) Mutual exclusion

46) The kernel of the operating system remains in the primary memory because _____.

- a) It is mostly called (used)
- b) It manages all interrupt calls
- c) It controls all operations in process
- d) It is low level

47) The technique, for sharing the time of a computer among several jobs, which switches jobs so rapidly such that each job appears to have the computer to itself, is called _____.

- a) Time Sharing
- b) Time out
- c) Time domain
- d) Multitasking

48) An operating system is _____ driven.

- a) Trap.
- b) an instruction .
- c) an interrupt.
- d) none of the above.

49) In Simple Batch System, programs are submitted in _____

- a) groups.
- b) batches.
- c) queues.
- d) all of the above.

50) _____ access is used to transfer blocks of data from buffer storage directly to main memory without CPU intervention.

- a) Main memory access
- b) cache memory access
- c) Direct memory access
- d) virtual memory access

Q. 2 Choose the Correct Answer [3 points each] – (verify your choice)

51) Using Shortest Remaining Time First algorithm, find the average waiting time for the following set of processes given with their arrival time in the order:

Process : Burst Time : Arrival time .

P1	:	10	:	0 ,
P2	:	1	:	1 ,
P3	:	2	:	4 ,
P4	:	1	:	5 ,
P5	:	5	:	12.

- a) 1.4 milliseconds
- b) 2.4 milliseconds
- c) 5 milliseconds
- d) 5.2 milliseconds

Verification of the choice:

52) Using Round Robin Scheduling algorithm with quantum time slice = 4 , find the average waiting time for the following set of processes given with their arrival time in the order:

Process : Burst Time : Arrival time .

P1 : 10 : 0 ,

P2 : 1 : 1 ,

P3 : 2 : 4 ,

P4 : 1 : 5 ,

P5 : 5 : 12.

a) 1.4 milliseconds

b) 2.4 milliseconds

c) 5 milliseconds

d) 5.2 milliseconds

Verification of the choice:

53) Using First Come First Served Scheduling algorithm, find the average waiting time for the following set of processes given with their arrival time in the order:

Process : Burst Time : Arrival time .

P1 : 10 : 0 ,

P2 : 1 : 1 ,

P3 : 2 : 4 ,

P4 : 1 : 5 ,

P5 : 5 : 12.

a) 1.4 milliseconds

b) 2.4 milliseconds

c) 5 milliseconds

d) 5.2 milliseconds

Verification of the choice:

54) Using **Shortest Job First Scheduling algorithm**, find the average waiting time for the following set of processes given with their arrival time in the order:

Process : Burst Time : Arrival time .

P1 : 10 : 0 ,

P2 : 1 : 1 ,

P3 : 2 : 4 ,

P4 : 1 : 5 ,

P5 : 5 : 12.

a) 1.4 milliseconds

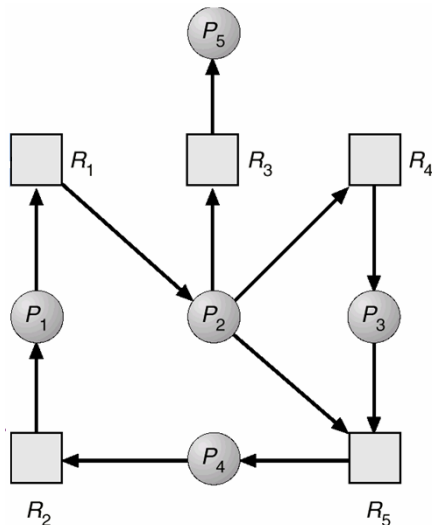
b) 2.4 milliseconds

c) 5 milliseconds

d) 5.2 milliseconds

Verification of the choice:

55) The following resources allocation graph shows a deadlock. What is the best process should be killed to solve the deadlock?



a) P1

b) P2

c) P3

d) P4

Verification of the choice: