OS Unit 1 Quiz - Answer Key

1. **In a microkernel-based operating system, of the operating system services such as file management and device drivers are implemented in:**
   a) User space
   b) Kernel space
   c) CPU cache
   d) Memory buffer
   Answer: a) User Space

2. **The main purpose of using time-sharing in an operating system is to:**
   a) Reduce CPU idle time.
   b) Improve memory management.
   c) Allow multiple users to interact with the computer simultaneously.
   d) Manage I/O devices efficiently.
   Answer: c) Allow multiple users to interact with the computer simultaneously.

3. **Which of the following components of an operating system maintains information about currently executing processes?**
   a) Process control block (PCB)
   b) System call interface
   c) File control block (FCB)
   d) Stack control block (SCB)
   Answer: a) Process control (PCB)

4. **Which of the following is NOT a goal of an operating system's memory management function?:**
   a) To allocate and deallocate memory to processes.
   b) To ensure fair CPU scheduling.
   c) To manage swapping between main memory and disk.
   d) To protect memory regions belonging to different processes.
   Answer: b) To ensure fair CPU scheduling.

5. **In an operating system, the 'context' of a refers to:**
   a) The entire state of the process
   b) The scheduling information of the process
   c) The contents of the CPU registers
   d) The contents of the memory used by the process
   Answer: a) The entire state of the process

6. **Which system call is used to terminate a process in Unix?**
   a) abort()
   b) exit()
   c) stop()
   d) terminate()
   Answer: b) exit()

7. **Which of the following is not a function of the operating system?**
   a) Memory management
   b) management
   c) Compilation
   d) File management
   Answer: c) Compilation

8. **In a time-sharing operating system, the operating system uses a context switch to:**
   a) Switch between I/O devices.
   b) Switch between processes.
   c) Manage memory allocation.
   d) Maintain a process queue.
   Answer: b) Switch between processes.

9. **In a system call, when a process moves from running to waiting state, it is due to:**
   a) Completion of CPU burst
   b) Waiting for I/O
   c) Execution of a trap
   d) Completion of a time slice
   Answer: b) Waiting for I/O

10. **Which of the following is NOT a core responsibility of an operating system?**
    a) Process management

b) Memory management
c) File system management
d) Application development
Answer: d) Application development

11. **What is the primary advantage of using a microkernel approach in the operating system design?** a) Better performance
b) Increased security and reliability
c) Simplified memory management
d) Simplified process
Answer: b) Increased security and reliability

12. **The main objective of multiprogramming is to:**
a) Maximize CPU utilization
b) Minimize the number of processes in the system
c) Maximize memory usage
d) Maximize the number of I/O devices
Answer: a) Maximize CPU utilization

13. **Which of the following operating system structures is the most appropriate for implementing a time-critical system?**
a) Layered
b) Monolithic
c) Microkernel
d) Distributed
Answer: c) Microkernel

14. **Which of the following is NOT a time-sharing operating system?**
a) Multiple jobs are executed by switching the CPU between them.
b) CPU scheduling allows multiple jobs to execute at the same time.
c) Time-slicing is used to cycle between jobs.
d) An interactive user interface is provided.
Answer: b) CPU scheduling allows multiple jobs to execute at the same time.

15. **Which memory management technique allows the execution of a process that is not entirely in memory?**
a) Segmentation
b) Paging
c) Virtual memory
d) Caching
Answer: c) Virtual memory

16. **Which of the following is a key aspect of protection and security in operating systems?**
a) Increasing system speed
b) Managing file systems
c) Controlling access to system resources
d) Designing user interfaces
Answer: c) Controlling access to system resources

17. **What is a system call?**
a) A function that allows user programs to request services from the OS
b) A type of computer hardware
c) A method of connecting to the internet
d) A way to shut down the computer
Answer: a) A function that allows user programs to request services from the OS

18. **Which of the following is an example of a system call?**
a) print()
b) fork()
c) scanf()
d) malloc()
Answer: b) fork()

19. **Which of the following best describes a monolithic kernel?**
a) A kernel where all OS services run in kernel space
b) A kernel that supports only one user at a time
c) A kernel designed for embedded systems
d) A kernel that runs entirely in user mode

Answer: a) A kernel where all OS services run in kernel space

20. **Which of the following is a responsibility of process management?**
    a) Creating and deleting processes
    b) Managing file systems
    c) Handling network protocols
    d) Designing user interfaces
    Answer: a) Creating and deleting processes

21. **What is the main function of the CPU scheduler?**
    a) To allocate memory to processes
    b) To manage file systems
    c) To decide which process runs next
    d) To handle I/O operations
    Answer: c) To decide which process runs next

22. **Which of the following best describes paging in memory management?**
    a) A method of compressing files
    b) A technique for dividing memory into fixed-size blocks
    c) A way to prioritize processes
    d) A file system organization method
    Answer: b) A technique for dividing memory into fixed-size blocks

23. **What is the main purpose of a device driver?**
    a) To manage CPU scheduling
    b) To provide an interface between the OS and hardware devices
    c) To allocate memory
    d) To manage user accounts
    Answer: b) To provide an interface between the OS and hardware devices

24. **Which of the following best describes multitasking?**
    a) Running multiple applications simultaneously
    b) Using multiple computers at once
    c) Having multiple users on a system
    d) Connecting to multiple networks
    Answer: a) Running multiple applications simultaneously

25. **What is the primary function of the shell in an operating system?**
    a) To manage hardware resources
    b) To provide a user interface for interacting with the OS
    c) To allocate memory to processes
    d) To handle network protocols
    Answer: b) To provide a user interface for interacting with the OS

26. **What is the main purpose of the boot loader in an operating system?**
    a) To shut down the computer
    b) To load the operating system into memory
    c) To manage file systems
    d) To schedule processes
    Answer: b) To load the operating system into memory

27. **Which of the following is a primary function of an operating system?**
    a) Compiling code
    b) Managing hardware resources
    c) Designing software
    d) Creating user documentation
    Answer: b) Managing hardware resources

28. **What does the term "multiprogramming" refer to?**
    a) Running multiple applications in sequence
    b) Running multiple applications simultaneously
    c) Running multiple operating systems on a single machine
    d) Running a single application on multiple machines
    Answer: b) Running multiple applications simultaneously

29. . **Which of the following best describes the role of the operating system kernel?**
a) Handles user interactions
b) Manages hardware and software resources
c) Provides network connectivity
d) Compiles programming code
Answer: b) Manages hardware and software resources

30. **Which operating system structure allows the user to interact directly with the hardware?**
a) Monolithic
b) Microkernel
c) Layered
d) Client-server
Answer: a) Monolithic

31. **Which of the following is a characteristic of real-time operating systems?**
a) Non-deterministic response time
b) Fixed priority scheduling
c) High throughput
d) High interactivity
Answer: b) Fixed priority scheduling

32. **What is a deadlock in operating systems?**
a) A situation where a process cannot be terminated
b) A situation where two or more processes cannot proceed because each is waiting for the other
c) A situation where a process exceeds its allocated memory
d) A failure in hardware communication
Answer: b) A situation where two or more processes cannot proceed because each is waiting for the other

33. **Which of the following best defines a thread?**
a) A lightweight process
b) A hardware interrupt
c) A data structure in memory
d) A program stored on disk
Answer: a) A lightweight process

34. **Which of the following is NOT a benefit of virtual memory?**
a) Allows larger applications to run
b) Provides isolation between processes
c) Increases physical memory size
d) Simplifies memory management
Answer: c) Increases physical memory size

35. **Which of the following refers to a set of techniques for protecting computer systems from unauthorized access?**
a) Virtualization
b) Security policies
c) Encryption
d) Access control
Answer: d) Access control

36. **Which type of OS is designed to perform a task within a guaranteed time frame?**
a) Real-time OS
b) Batch OS
c) Time-sharing OS
d) Distributed OS
Answer: a) Real-time OS

37. **Which scheduling algorithm allocates the CPU first to the process that requests it first?**
a) Shortest Job First
b) Round Robin
c) Priority Scheduling
d) First-Come-First-Served (FCFS)
Answer: d) First-Come-First-Served (FCFS)

38. **Which operating system does not support multitasking?**
a) Windows
b) MS-DOS
c) UNIX
d) Linux
Answer: b) MS-DOS

39. **What is the use of the exec() system call in an operating system?**
a) To create a new process
b) To terminate a process

c) To replace the current process image with a new process image
d) To wait for child process termination
Answer: c) To replace the current process image with a new process image

40. **Which scheduling algorithm is most suitable for a time-sharing operating system?**
a) Shortest Job First
b) First-Come, First-Served
c) Priority Scheduling
d) Round Robin
Answer: d) Round Robin