UNIT-I: Operating Systems and Process Management

Multiple Choice Questions (MCQs)

1. The primary objective of an Operating System is to:

a) Compile programs
b) Manage computer resources
c) Design hardware
d) Create databases

Answer: b) Manage computer resources

2. Which operating system executes jobs without user interaction?

a) Time-sharing OS
b) Real-time OS
c) Simple Batch OS
d) Distributed OS

Answer: c) Simple Batch OS

3. In a multiprogramming system, the CPU:

a) Executes only one process permanently
b) Remains idle most of the time
c) Executes multiple programs by switching among them
d) Works only in batch mode

Answer: c) Executes multiple programs by switching among them

4. Which operating system allows multiple users to share CPU time simultaneously?

a) Batch System
b) Time-Sharing System
c) Real-Time System
d) Parallel System

Answer: b) Time-Sharing System

5. A Personal Computer Operating System is primarily designed for:

a) Single-user environment
b) Multiple processors only

c) Real-time applications
d) Distributed applications

Answer: a) Single-user environment

6. A Parallel System consists of:

a) One processor only
b) Multiple processors working together
c) No processor
d) Virtual processors only

Answer: b) Multiple processors working together

7. In a Distributed System, processors:

a) Share a common memory
b) Are connected through communication networks
c) Work independently without communication
d) Use only one CPU

Answer: b) Are connected through communication networks

8. Which operating system is mainly used in embedded applications?

a) Batch OS
b) Time-sharing OS
c) Real-Time OS
d) Distributed OS

Answer: c) Real-Time OS

9. Which of the following is an Operating System service?

a) File management
b) Text editing
c) Program compilation
d) Data entry

Answer: a) File management

10. A system call acts as an interface between:

a) User and hardware
b) Application programs and Operating System
c) Compiler and linker
d) CPU and memory

Answer: b) Application programs and Operating System

11. A process is defined as:

a) A program stored on disk
b) A program in execution
c) A file in memory
d) A device driver

Answer: b) A program in execution

12. Which state is not a part of the process life cycle?

a) Ready
b) Running
c) Waiting
d) Compiling

Answer: d) Compiling

13. The Process Control Block (PCB) contains:

a) User password
b) Process information
c) Hardware details
d) File names only

Answer: b) Process information

14. Process scheduling is used to:

a) Allocate memory
b) Select a process for CPU execution
c) Manage files
d) Control input devices

Answer: b) Select a process for CPU execution

15. Cooperating processes are processes that:

a) Cannot affect other processes
b) Can affect or be affected by other processes
c) Execute independently
d) Never communicate

Answer: b) Can affect or be affected by other processes

16. Which of the following is an advantage of cooperating processes?

a) Increased modularity
b) Reduced performance

c) No communication
d) Increased deadlocks only

Answer: a) Increased modularity

17. Threads within the same process share:

a) Program counter only
b) Registers only
c) Address space and resources
d) Stack only

Answer: c) Address space and resources

18. Threads are often called:

a) Heavyweight processes
b) Lightweight processes
c) Batch processes
d) System calls

Answer: b) Lightweight processes

19. Which of the following is not an Operating System component?

a) Process Management
b) Memory Management
c) File Management
d) Compiler Design

Answer: d) Compiler Design

20. The kernel of an operating system is responsible for:

a) Resource management
b) Text editing
c) Database management
d) Program debugging

Answer: a) Resource management

Fill in the Blanks

1. An Operating System acts as an interface between the user and the _____.
   Answer: hardware
2. A program in execution is called a _____.
   Answer: process
3. In a time-sharing system, CPU time is divided into _____ slices.
   Answer: time
4. A Simple Batch System executes jobs in _____ mode.
   Answer: batch
5. A Real-Time System must provide responses within specified _____ constraints.
   Answer: time
6. The core component of an Operating System is called the _____.
   Answer: kernel
7. The interface between application programs and the operating system is known as a _____ call.
   Answer: system
8. A process that can affect or be affected by other processes is called a _____ process.
   Answer: cooperating
9. Multiple programs residing in memory simultaneously is known as _____.
   Answer: multiprogramming
10. A Parallel System contains multiple _____.
    Answer: processors
11. The information related to a process is stored in the _____.
    Answer: PCB (Process Control Block)
12. The process state in which the process is waiting for CPU allocation is called the _____ state.
    Answer: ready
13. Threads belonging to the same process share the same _____ space.
    Answer: address
14. Threads are also known as _____ processes.
    Answer: lightweight
15. File management is an important service provided by the _____ System.
    Answer: Operating
16. The process of selecting a process for execution is called CPU _____.
    Answer: scheduling
17. A Distributed System consists of processors connected by a _____ network.
    Answer: communication
18. The CPU, memory, and I/O devices are considered system _____.
    Answer: components
19. Creating and deleting processes are examples of process _____.
    Answer: operations
20. The Operating System manages both hardware and software _____.
    Answer: resources