SHORT

**1. Goals of an Operating System**

- **Efficiency**: Optimize resource usage.
- **Convenience**: User-friendly interface.
- **Resource Management**: Manage hardware/software resources.
- **Security**: Protect against unauthorized access.
- **Reliability**: Ensure stable operation.

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**2. Starvation**

- A situation where a process is perpetually denied the resources it needs to proceed.

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**3. Inter-Process Communication (IPC)**

- Mechanism for processes to communicate and synchronize actions (e.g., shared memory, message passing).

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**4. Thread**

- The smallest unit of processing that can be scheduled, allowing for concurrent execution within a process.

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**5. Round-Robin Scheduling with Large Time Quantum**

- **First-Come, First-Served (FCFS)** scheduling.

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**6. Scheduler for Ready Queue**

- **Short-Term Scheduler**.

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**7. Return Values of fork() System Call**

- **Parent Process**: Process ID (PID) of the child.
- **Child Process**: 0.

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**8. Throughput**

- Number of processes completed in a given time period.

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**9. Synchronization**

- Mechanism to control access to shared resources by multiple processes.

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**10. Mutual Exclusion**

- Only one process can access a critical section at a time.

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**11. Operating System**

- System software that manages computer hardware and software resources.

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**12. Interface for OS Services**

- **System Calls**.

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**13. States of a Process**

- **New**, **Ready**, **Running**, **Waiting**, **Terminated**.

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**14. Difference Between Thread and Process**

- **Process**: Own memory space, heavier overhead.
- **Thread**: Shares memory, lighter and faster.

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**15. Process Affinity**

- Preference for a process to run on a specific CPU/core for better performance.

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**16. Solution for Starvation**

- **Fair Scheduling**, **Priority Adjustment**, **Aging**.

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**17. System Model for Deadlock**

- Involves processes, resources, and a request graph with circular wait conditions.

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**18. C Program Printing 'CMRCET'**

- Prints "CMRCET" **four times**.

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**19. Requirements of Critical Section**

- **Mutual Exclusion**, **Progress**, **Bounded Waiting**, **No Busy Waiting**, **Deadlock Freedom**.

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**20. Semaphore**

- Synchronization tool managing access to shared resources; types include **binary** and **counting**. Operations: **Wait (P)** and **Signal (V)**.