**Disk Scheduling Algorithms and Management**

1. **What is the main goal of disk scheduling algorithms?**
   * A) Maximize throughput
   * B) Minimize seek time
   * C) Ensure fair allocation of disk access
   * **D) All of the above**
2. **Which of the following disk scheduling algorithms always selects the request with the minimum seek time from the current head position?**
   * A) FCFS (First-Come, First-Served)
   * **B) SSTF (Shortest Seek Time First)**
   * C) SCAN
   * D) C-SCAN
3. **What is the primary disadvantage of the SSTF (Shortest Seek Time First) algorithm?**
   * A) It is complex to implement
   * **B) It can cause starvation**
   * C) It is less efficient
   * D) It ignores seek time
4. **In the SCAN disk scheduling algorithm, the disk arm moves:**
   * **A) Back and forth over the disk**
   * B) Only in one direction
   * C) In a circular manner
   * D) Randomly

**File System Interface and Implementation**

1. **What is the role of the file system in an operating system?**
   * A) Managing the physical storage of data
   * B) Providing an interface for user data access
   * C) Maintaining metadata about files
   * **D) All of the above**
2. **Which of the following is NOT a typical operation provided by a file system interface?**
   * A) Open a file
   * B) Close a file
   * C) Delete a file
   * **D) Format a hard drive**
3. **Which file system allows for journaling to keep track of changes not yet committed to the file system?**
   * A) FAT32
   * **B) NTFS**
   * C) EXT2
   * D) HFS
4. **What is a directory in a file system?**
   * A) A type of file that contains data
   * **B) A special file that lists other files**
   * C) A security mechanism
   * D) A physical section of a disk

**File-System Structure**

1. **In the context of file-system structure, what is a superblock?**
   * A) A block containing user data
   * **B) A block containing metadata about the file system**
   * C) A block used for file allocation
   * D) A block used for free-space management
2. **Which of the following is a disadvantage of contiguous file allocation?**
   * A) It is complex to implement
   * **B) It leads to fragmentation**
   * C) It has high access time
   * D) It is difficult to extend files
3. **What structure is used by UNIX file systems to store information about a file?**
   * A) FAT table
   * B) Directory entry
   * **C) Inode**
   * D) Superblock

**Allocation Methods**

1. **Which file allocation method uses linked lists to keep track of file blocks?**
   * A) Contiguous allocation
   * **B) Linked allocation**
   * C) Indexed allocation
   * D) Multilevel indexed allocation
2. **What is a major advantage of indexed allocation over linked allocation?**
   * A) Simplicity of implementation
   * **B) Better random access performance**
   * C) Efficient storage utilization
   * D) Reduced metadata overhead
3. **In a file system with multilevel indexed allocation, how is large file support achieved?**
   * A) By using direct pointers
   * **B) By using multiple levels of indirect pointers**
   * C) By linking blocks in a chain
   * D) By pre-allocating contiguous space

**Free-Space Management**

1. **What is the purpose of free-space management in a file system?**
   * A) To manage user file access permissions
   * **B) To keep track of free disk space**
   * C) To store file data efficiently
   * D) To organize directories and files
2. **Which of the following methods is NOT used for free-space management?**
   * A) Bit vector
   * B) Linked list
   * **C) Paging**
   * D) Grouping
3. **What is a disadvantage of using a linked list for free-space management?**
   * A) It is difficult to implement
   * B) It requires a large amount of memory
   * C) It does not support dynamic allocation
   * **D) It has slow access time due to sequential search**
4. **In the context of file systems, what is a bit vector (or bitmap)?**
   * A) A sequence of bits where each bit represents a file
   * **B) A data structure where each bit represents a block’s allocation status**
   * C) A collection of pointers to free blocks
   * D) A method to store file metadata