OS Ch11 Quiz

1. Transfers between memory and disk are performed a ____.
   A) byte at a time
   B) file at a time
   C) block at a time
   D) sector at a time

Ans: C

2. A disk with free blocks 0,1,5,9,15 would be represented with what bit map?
   A) 0011101110111110
   B) 1100010001000001
   C) 0100010001000001
   D) 1100010001000000

Ans: B

3. Which of following statements is correct for linked allocation of disk space?
   A) can be used effectively for both sequential-access and direct-access files.
   B) decreased reliability due to lost or damaged pointers.
   C) it suffers from the external fragmentation problem.
   D) file size can be unknown when it is created and can continue to grow
   E) the space overhead is generally larger than the overhead in indexed allocation method.

Sol. (b)(d)

4. Which of following statements is correct for contiguous allocation of disk space?
   A) great for both sequential-access and direct-access files.
   B) it suffers from the external fragmentation problem.
   C) file size can be unknown when it is created and can continue to grow
   D) the extent-based method is a modified contiguous allocation scheme to solve the external fragmentation problem.

Sol. (a)(b)

5. Which of following statements is correct?
   A) A page cache uses virtual memory technique to cache file data as pages.
   B) Routine I/O through file system uses a page cache.
   C) Memory-mapped I/O uses a buffer cache.

D) Unified buffer cache means to use the same cache for both memory-mapped pages and ordinary file system I/O to avoid double caching.

E) Linux and windows use unified virtual memory which means to cache both process pages and file data by using page caching

Sol. (a)(d)(e)`

1. Order the following file system layers in order of lowest level to highest level.

[1] I/O control

[2] logical file system

[3] basic file system

[4] file-organization module

[5] devices

Ans: 51342

2. what structure in disk is used for maintaining information in each statement below?

(a) _____ contains volume details

(b) _____ contains information needed by system to boot OS

(c) _____ maintains file names and the associated inode numbers

(d) _____ contains total number of blocks, number of free blocks, block size, etc.

(e) _____ contains file's details, including file permissions, ownership, size, and location of the data blocks, etc.

(f) _____ is maintained per file system, while _____ is maintained per file.

Sol (e)

a ➔ volume control block, b➔ boot control block, c ➔ directory structure, d ➔ volume control blocks, e ➔ FCB f ➔ directory, FCB

3. Please describe three ways for indexed allocation to support files with unbounded length. Which method is used in UNIX UFS system?

Sol. 1. Link together several index blocks. 2. Multilevel index scheme 3. Combined scheme : the index block contain pointers point to direct blocks, indirect block, double indirect block, or triple indirect block, …etc.