



Date: 07/03/2015

Time: 10.30am – 12.00pm

Answer All Questions

**QUESTION 1**

- 1.1) List three (3) types of memory partitioning schemes.
- 1.2) Briefly explain two (2) types of memory fragmentation schemes exist in RAM.
- 1.3) Suppose the free memory manager of an operating system has the following unallocated blocks of memory namely A to E with below mentioned sizes. Three incoming processes P, Q and R request for 10KB, 5KB and 7KB of memory from the memory manager respectively.

Free Block Name	Block Size
A	16KB
B	9KB
C	25KB
D	7KB
E	10KB

State the name of the free block that is allocated to each of the incoming processes P, Q, R based on the following algorithms. State all the assumptions you make.

- i. Best Fit
- ii. Worst Fit
- iii. First Fit
- iv. Next Fit

**QUESTION 2**

- 2.1) Explain the function of the memory bound registers in a personal computer.
- 2.2) Permissions of a nimal.txt file in Unix is given as **-rw-r-xrw-** in the standard notation. Explain the user rights of nimal.txt.
- 2.3) Give the difference between *Raid 0* and *Raid 1* disk management schemes.
- 2.4) What is the capacity of a hard disk with 1024 bytes per sector, 400 sectors per track, 2000 cylinders and 6 double sided platters?

### QUESTION 3

- 3.1) Describe the terms *Confidentiality* and *Integrity* in the context of security goals of an operating system.
- 3.2) Suppose a disk drive has 4000 cylinders which are numbered from 0 to 3999. The drive currently services a request at cylinder 100 and the previous request was cylinder 150. The queue of pending requests in order are as follows; 300, 3000, 700, 1500, 400, 1600, 1000, 1200, 50.

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms? (show the appropriate steps in your calculations)

- (i) SSTF
- (ii) C-SCAN

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