

[ 11 ]

Sardar Patel University  
External Examination (ATKT)  
M.Sc. (Information Technology) Semester – I  
PS01CINT05: Operating System Concepts  
30<sup>th</sup> April, 2015 Thursday

Time: 10:30 AM to 01:30 PM

Max. Marks: 70

**Q-1 Choose the most appropriate option for each question. [08]**

- (i) Which program is loaded first when you start your computer system?
  - a. Bootstrap Loader
  - b. Linker
  - c. Kernel
  - d. Microkernel
- (ii) What is the full form of API?
  - a. Application Protection Interface
  - b. Application Programming Interface
  - c. Application Protection Instance
  - d. Application Programming Instance
- (iii) The \_\_ indicates the address of the next instruction to be executed for this process.
  - a. Address space
  - b. Address counter
  - c. Programme counter
  - d. Stack
- (iv) Peterson’s solution is a \_\_ solution to the critical section problem.
  - a. Software Based
  - b. Hardware Based
  - c. Firmware Based
  - d. Networked Based
- (v) Which of the following is NOT a part of thread?
  - a. Thread ID
  - b. Thread name
  - c. Register set
  - d. Program counter
- (vi) Level \_ of RAID indicates mirroring only, not stripping.
  - a. 1
  - b. 2
  - c. 3
  - d. 4
- (vii) The time for disk arm to move the heads to the cylinder containing the desired sector is called \_\_\_\_
  - a. Seek Time
  - b. Rotational Latency
  - c. Turnaround Time
  - d. Waiting Time
- (viii) Operating system is \_\_\_\_\_
  - a. Hardware
  - b. Software
  - c. Firmware
  - d. None of these

**Q-2 Answer ANY SEVEN from the following [14]**

- (i) List any four roles of operating systems.
- (ii) What do you mean by the word “system call”?
- (iii) Briefly explain the term “process”.
- (iv) List benefits of multithreading.
- (v) Differentiate between compile time and run time address binding.
- (vi) What do you mean by network attached storage?
- (vii) Briefly explain reader-writer problem in context of concurrent processing.
- (viii) Differentiate between file and directory.
- (ix) What are the needs for using RAID?

Q-3  
A. Write a note on clustered systems. [06]

B. Write a note on command interpreter. [06]

OR

B. Explain layered structure of operating system.

Q-4  
A. Consider following set of processes with CPU Burst time in milliseconds. [06]

Process	CPU Burst Time
P1	6
P2	4
P3	7
P4	3

Draw the Gantt Chart based on the above values and find the average waiting time with FCFS scheduling algorithm.

B. Write a note on necessary conditions for deadlock. [06]

OR

B. Explain the concept of fragmentation.

Q-5  
A. Write a note on segmentation. [06]

B. Explain the concept of safe state by giving suitable example. [06]

OR

B. Explain basic page replacement algorithm.

Q-6  
A. What is directory? Explain any one type of directory structure with suitable example. [06]

B. Execute SCAN disk scheduling algorithm for following device queue. [06]  
98,183,37, 122, 14, 124, 65, 67

The current head position is at cylinder 53.

Represent the execution of the algorithm graphically and calculate total head movement.

OR

B. Write the use of following UNIX commands. (ANY THREE)  
(i) cp (ii) ls (iii) who (iv) date (v) man

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