

**Total No. of Questions: 09**

**B.Tech. (CSE/IT) (2011 Onwards) (Sem. – 4)**

**OPERATING SYSTEMS**

**M Code: 56604**

**Subject Code: BTCS-401**

**Paper ID: [A1183]**

**Time: 3 Hrs.**

**Max. Marks: 60**

**INSTRUCTIONS TO CANDIDATES:**

1. **SECTION-A is COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

**SECTION A**

1. a) Explain the function of Shell in brief.  
b) Explain in brief about process synchronization.  
c) Define the term Waiting time and Turnaround time in reference to scheduling algorithms.  
d) Differentiate between Internal and External Fragmentation.  
e) Write at least two advantages of virtual memory concept.  
f) Define the term Disk Bandwidth.  
g) Differentiate between seek time and rotational latency.  
h) Explain the term file system in brief.  
i) Explain various goals of Protection.  
j) Define the term Distributed Operating Systems.

**SECTION B**

2. Explain in detail the role of Operating system as a resource Manager.
3. Explain in detail the following CPU scheduling algorithms:
  - a) Priority Scheduling
  - b) Round Robin

4. Explain the role of I/O device controller in detail.
5. Define the term security. Explain various goals of security.
6. Differentiate between UNIX and Windows based operating systems.

### SECTION C

7. a) Explain the different views of an operating system in brief.  
b) Define the term deadlock. Explain various necessary conditions for a deadlock to occur. Explain in brief about deadlock prevention.
8. Write a detailed note on secondary storage structure.
9. What is the need of Page replacement? Consider the following reference string  
7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

Find the number of Page Faults with FIFO, Optimal Page replacement and LRU with four free frames which are empty initially. Which algorithm gives the minimum number of page faults?

Roll No.

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Total No. of Pages : 02

Total No. of Questions : 18

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**SECTION-A**

**Write briefly :**

1. Explain the need of an Operating System.
2. Explain the term PCB in brief.
3. Define the term deadlock with an example.
4. Define the term thrashing. What is the cause of thrashing? Explain.
5. Differentiate between Paging and Segmentation scheme of Memory Management.
6. What is meant by Disk Scheduling? Why Disk Scheduling is necessary?
7. What is the need of I/O traffic controller? Discuss.
8. Explain in brief about the Physical File system.
9. Differentiate between Protection and Security.
10. Write two advantages of Windows based Operating System.

### **SECTION-B**

11. Explain in brief about the functions of Kernel and shell.
12. Write a detailed note on Process Synchronization.
13. Write a brief note on Segmentation scheme of memory management.
14. Write a brief note on Logical File System.
15. Write a brief note on Windows based Operating Systems.

### **SECTION-C**

16. Write a detailed note on operating system structures.
17.
  - a) Explain in detail about device management policies.
  - b) Write a detailed note on I/O system in reference to device management.
18.
  - a) Write a brief note on Layered Architecture in relation to file management
  - b) Explain in detail the following CPU scheduling algorithms :
    - (i) Shortest Job First
    - (ii) Multilevel feedback Queue scheduling

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## SECTION-A

1. Explain the need of an Operating System.
2. Explain the term deadlock in brief.
3. Differentiate between External and Internal Fragmentation.
4. Write advantages of virtual memory concept.
5. Explain the term PCB in brief.
6. Differentiate between seek time and rotational latency.
7. Write two advantages of LINUX Operating System.
8. Why is disk scheduling important?
9. Define the term file. List various attributes of a file.
10. Write various goals of Protection.

### SECTION-B

11. Explain different roles of operating system in brief. (5)
12. Explain in detail the following CPU scheduling algorithms :
  - (a) Shortest Job First. (2.5)
  - (b) Multilevel feedback Queue scheduling. (2.5)
13. Write a brief note on Segmentation scheme of memory management. (5)
14. Differentiate between UNIX and Windows based operating systems. (5)
15. Define the term security. Explain various goals of security (5)

### SECTION-C

16. Explain in detail the various Algorithms of Disk Scheduling with an example. (10)
17. (a) Explain in detail the Layered Architecture of an OS. (5)  
(b) Write a brief note on Logical File System. (5)
18. Explain **any three** Page Replacement algorithms with an example. (10)

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**SECTION-A**

Write briefly :

- 1) Write at least two functions of Operating System.
- 2) Write a brief note on Shell.
- 3) Explain the term PCB.
- 4) Explain in brief about process synchronization.
- 5) Differentiate between External and Internal Fragmentation.
- 6) Write at least two differences between Paging and Segmentation scheme of memory management.
- 7) Why is disk scheduling important?
- 8) Differentiate between protection and security.
- 9) Define the term file. List various attributes of a file.
- 10) Write at least two characteristics of Windows based Operating Systems.

## **SECTION-B**

- 11) Explain the following terms in brief :
  - a) Multiprogramming Systems
  - b) Time Sharing Systems
- 12) Define the term deadlock. Explain the deadlock prevention in detail.
- 13) Explain with an example the concept of shared segments in detail.
- 14) Write a brief note on File System Architecture.
- 15) Differentiate between LINUX and Windows based operating systems.

## **SECTION-C**

- 16) What is disk scheduling? Explain in detail the various algorithms of Disk scheduling with examples.
- 17)
  - a) Explain any five LINUX Operating System commands with example.
  - b) Explain in detail the layered structure of an operating System.
- 18) Write a detailed note on Multiprocessor and distributed operating systems.

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