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**Reg. No. :**

**Question Paper Code: 43025**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Third Semester

Computer Science and Engineering

14UCS305 - OPERATING SYSTEMS

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Which is not a function of operating system?

(a) Memory management (b) Disk Management(c) Application Management (d) Virus protection

2. The number of processes completed per unit time is known as

(a) output (b) throughput(c) efficiency (d) capacity

3. The most optimal scheduling algorithm that avoids starvation is

(a) First come first served (b) Shortest job first (c) Round robin (d) None of these

4. Which scheduling policy is most suitable for a time-shared operating system

(a) Shortest-job First. (b) Priority

(c) Round-Robin. (d) First-Come-First-Serve

5. ‘LRU’ page replacement policy is

(a) Last Replaced Unit. (b) Last Restored Unit

(c) Least Recently Used (d) Least Required Unit

6. Consider a logical address space of eight pages of 1024 words each mapped onto a physical memory of 32 frames. How many bits are in Logical Address?

(a) 10 (b) 12 (c) 13 (d) 15

7. The operating system keeps the information of files in a table called

(a) File Folder Table (FFT)  (b) File Index Table (FIT) (c) File Allocation Table(FAT) (d) Directory Index Table(DIT)

8. Whenever a process needs I/O to or from a disk it issues a

(a) system call to the CPU  (b) system call to the operating system (c) a special procedure (d) all of these

9. The design goals of Windows include (i) Extensibility (ii) Reliability (iii) Portability (iv) compatibility.

(a) (i) and (ii) only

(b) (ii) and (iii) only (c) (i) , (ii) and (iii) only

(d) (i) , (ii), (iii) and (iv)

10. Linux uses a time-sharing algorithm

(a) to pair preemptive scheduling between multiple processes

(b) for tasks where absolute priorities are more important than fairness

(c) both (a) and (b)

(d) none of the mentioned

PART - B (5 x 2 = 10 Marks)

11. What are the benefits of multithreaded programming?

12. What are the various scheduling criteria for CPU Scheduling?

13. Differentiate between page and segment?

14. What are the operations that can be performed on a directory?

15. List the various key features of VM ware server virtualization.

PART - C (5 x 16 = 80 Marks)

16. (a) Discuss about scheduling with queuing diagram. (16)

Or

(b) Explain in detail about computer system organization and operating system structure with operations. (16)

17. (a) (i) Explain the classical problem on synchronization. (8)

(ii) Explain about monitors. (8)

Or

(b) Consider the following snapshot of a system:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Process* | *Allocation* | | | | *Max* | | | | *Available* | | | |
| *A* | *B* | *C* | *D* | *A* | *B* | *C* | *D* | *A* | *B* | *C* | *D* |
| *P0* | *0* | *0* | *1* | *2* | *0* | *0* | *1* | *2* | *1* | *5* | *2* | *0* |
| *P1* | *1* | *0* | *0* | *0* | *1* | *7* | *5* | *0* |  |  |  |  |
| *P2* | *1* | *3* | *5* | *4* | *2* | *3* | *5* | *6* |  |  |  |  |
| *P3* | *0* | *6* | *3* | *2* | *0* | *6* | *5* | *2* |  |  |  |  |
| *P4* | *0* | *0* | *1* | *4* | *0* | *6* | *5* | *6* |  |  |  |  |

Answer the following question using banker’s algorithm: (i) what is the content of the need matrix? (ii) Is the system in a safe state? (iii) If the request from process *P1* arrives for (0, 4, 2, 0), can the request be granted immediately. (16)

18. (a) Illustrate contiguous memory allocation schemes, give examples. (16)

Or

(b) Explain about the concepts of virtual memory in detail. (16)

19. (a) Discuss in detail the directory structure implementation with necessary examples. (16)

Or

(b) (i) Discuss in detail about types of file access. (8)

(ii) Write in detail about Free-Space management. (8)

20. (a) Compare and contrast the features of Windows and LINUX operating system. (16)

Or

(b) Describe how file system is implemented in Windows. (16)