B.E/B.TECH DEGREE EXAMINATIONS: MAY/JUNE 2013

Fifth Semester

CSE112: OPERATING SYSTEMS

(Common To Computer Science And Engineering And Information Technology)

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 1 = 10 Marks)

1. Multiprogramming Systems

   a) Are easier to develop than single progrmming system   b) Execute each job faster

   c) Execute more jobs in the same time period   d) are used only on large mainframe computers

2. Switching the CPU to another Process requires to save state of the old process and loading new process state is called as

   a) Process Blocking   b) Context Switch

   c) Time Sharing   d) None of the above

3. _____ is a high level abstraction over Semaphore

   a) Shared memory   b) Message passing

   c) Monitor   d) Mutual exclusion

4. The Dispatcher

   a) Actually schedules the tasks into the processor   b) Puts task into I/O wait

   c) always small and simple   d) Never changes task priorities

5. Before proceeding with its execution, each process must acquire all the resources it needs is called

   a) Hold and wait   b) No pre-emption

   c) Circular wait   d) Starvation

6. _____ is a technique of temporarily removing inactive programs from the memory of computer system

   a) Swapping   b) Spooling

   c) Semaphore   d) Monitor

7. A page fault occurs

   a) When the page is not in the memory   b) When the page is in the memory

   c) When the process enters the blocked state   d) When the process is in the ready state

8. Dangling pointer exist in

   a) single level directory   b) two level directory

   c) tree structured directory   d) acyclic graph directory

9. If the Disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98, 37, 14, 124, 65, 67.

   a) 310   b) 324

   c) 315   d) 321

10. Alternate name for elevator Algorithm

    a) C-SCAN Scheduling   b) LOOK Scheduling

    c) SCAN Scheduling   d) SSTF Scheduling

PART B (10 x 2 = 20 Marks)

11. Define process. What is the information maintained in the PCB?

12. What is a system program? Give an example

13. Differentiate pre emptive and non preemptive scheduling

14. List three requirements that a solution to critical section problem must satisfy

15. What is memory compaction? Why it is not preferred generally?

16. Why page size is always a power of 2?

17. What is Belady's anomaly?

18. How to solve the problem of shared deletion of files?

19. Mention any Two features of Linux file system

20. What is seek time and latency time?

PART C (5 x 14 = 70 Marks)

21. a) (i) Write short note on distributed systems   (4)

    (ii) Discuss briefly the various issues involved in implementing inter process   (10)
    communication in message passing system.

    OR)

    b) (i) List the types of process scheduling? Explain   (6)

    (ii) Write short note on system calls?   (8)

22. a)   Assume the following processes that arrive for execution at the time indicated
              and also mention with the length of the CPU burst time given in ms.

Process	Burst Time	Arrival Time
P1	9	0
P2	6	0
P3	3	0
P4	4	0

P5	2	4
P6	1	6

1) Give a Gantt chart illustrating the execution of these processes using FCFS, RR (quantum=2), SRTF and SJF.
2) Calculate the average TAT and AWT for the above scheduling algorithm.

(OR)

b) (i) Define thread? Explain the benefits of multithreaded model. (6)

(ii) Write and explain the Monitor solution for Dining -Philosophers problem (8)

23. a) (i) Given five memory partitions of size 100kB, 500kB, 200kB, 300kB and 600kB inorder. How would   each of the first, best and worst fit algorithms place processes of size in the order of 212kB, 417kB, 112kB and 426kB? (6)

(ii) Discuss the address translation scheme for converting virtual addresses to physical addresses in paging. (8)

(OR)

b) (i) Consider the following allocation of resources (6)

	Allocation	Max	Available
	A B C	A B C	A B C
P0	1 3 0	1 5 3	1 4 2
P1	0 2 0	2 2 5	
P2	1 0 1	2 4 2	
P3	0 1 1	0 6 4	
P4	0 0 1	1 4 4	

a. Calculate the Need matrix
b. Is this state a safe state?

(ii) Describe the segmentation technique with hardware (8)

24. a) (i) Explain the two level and tree file directory structures. (6)

(ii) Consider the following page reference string (8)

2,3,4,5,3,2,6,7,3,2,3,4,1,7,1,4,3,2,3,4,7.

Calculate the number of page faults that would occur for LRU, Optimal replacement   algorithms with frame size of 3 .

(OR)

b) (i) What is thrashing? Discuss. (6)

(ii) Explain the basic concepts involved in demand paging. (8)

25. a) Explain the disk space allocation methods.

(OR)

b) (i) Explain the various methods for handling free space in the disk. (6)

(ii) Explain the FCFS, SSTF, SCAN, C-SCAN disk scheduling algorithms with an (8)
example

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