Total No. of Questions : 12]

SEAT No. :

P4188

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M.E. (Computer Engineering)

OPERATING SYSTEM DESIGN

(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***All Six Questions are compulsory.***
2) ***Neat diagram must be drawn whenever necessary.***
3) ***Assume suitable data, if necessary.***

Q1) a) Demonstrate the two level implementation of operating system. **[5]**

b) What hardware instructions are removed from the virtual processor? Why they are removed? How they are removed? What are they replaced with? **[4]**

OR

Q2) a) Why do we call operating system an event handler and table manager? **[5]**

b) Explain how rendezvous pattern consists of two signaling pattern. **[4]**

Q3) a) What is mutual Exclusion? Why mutual Exclusion is most important IPC pattern for completion for resources? **[4]**

b) Explain steps in making system call with diagram. **[4]**

OR

Q4) a) The interval timer only counts down to zero. Suppose we wanted to keep the time of the day. How could we use the interval timer to keep the time of day? **[4]**

[redacted]

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b) Of the following scheduling methods, which only sense as preemptive scheduling policies, Which only make as nonpreemptive scheduling policies and which could be either **[4]**

i) First come first serve

ii) Round Robin

iii) Priority

iv) Multiple queues

v) Shortest job first

Q5) a) Explain how the database access and update IPC pattern is really a complicated variation of the mutual exclusion IPC pattern. **[4]**

b) Why is first-come, first-serve scheduling is fair? What is the main advantage of shortest job first scheduling over first-come, first-serve scheduling?**[4]**

OR

Q6) a) What is response ratio? What is the advantage of highest response ratio next scheduling over shortest job first scheduling. **[4]**

b) Why is mutual exclusion the most important IPC pattern for competition for resource? Why busy waiting cannot be used for solving general mutual exclusion problem? **[4]**

Q7) a) Why are there two levels of memory management? What are the major steps through when a program must before it can be loaded into memory Exclusion? **[4]**

b) Compare the *brk* and allocate memory system calls described in memory management? **[4]**

OR

Q8) a) Give the advantage of and disadvantage of keeping allocated blocks on the lock list? **[4]**

b) Compare segment and pages. How can the logic address space be contiguous if the physical address space is not configure? **[4]**

Q9) a) What is the purpose of device driver? Describe any two differences between block devices and character devices. **[4]**

b) What is Shortest Seek Time First (SSTF)? How elevator algorithm is useful in SSTF? State and Explain the elevator algorithm with batch processing in detail. **[4]**

OR

Q10)a) Some file system keeps versions of files. In such a file system one can go back access old versions of a file. Compare this with a text editor that keeps history of all edits and allow you to undo edits. Describe pros and cons of unifying these two mechanism. **[4]**

b) What is DMA controller? Why it is used? Give any two advantages of a DMA device controller over a Non-DMA device controller. **[4]**

Q11)a) Suppose we wanted to integrate the memory scheduler and processor scheduler. What information would they exchange, How would they use that information? **[5]**

b) What is authentication? What do you mean when we say an operation is "authorized"? How are passwords used for authentication? **[4]**

OR

Q12)a) What is meant by consumable resource? Is preemption of resource is possible? If yes state with example? **[5]**

b) State and explain the model of resource management. What are the tasks for which resource manager is responsible? **[4]**

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