

Total No. of Questions : 12]

SEAT No :

P 4639

[5355]-225

[Total No. of Pages : 3

M.E. (Computer Engineering)
OPERATING SYSTEM DESIGN
(2013 Pattern) (Semester - II) (510107)

Time : 3 Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Assume suitable data, if necessary.*
- 3) *Figures to the right indicates full marks.*

Q1) a) Explain the significance of base and bound registers? Comment if they could be used in system mode. **[5]**

b) What is a design problem? Relate two level implementation to software modules. **[4]**

OR

Q2) a) What is message buffering? Why is it useful. **[5]**

b) Relate the term race condition, Atomic action, critical section and mutual exclusion. **[4]**

Q3) a) Describe the following system calls Create process, fork, execv, Iseek. **[4]**

b) What are the disadvantages of using two different operating systems in a multiprocessor system? What data must be shared in multiprocessor system. **[4]**

OR

Q4) a) What is response ratio? What is the advantage of highest response ratio next scheduling over shortest job first scheduling **[4]**

b) What is Time Quantum constant used for? Why does the process descriptor have a Time Left field? **[4]**

P.T.O.

Q5) a) 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]

b) Give an analysis between messages and semaphores. Why are semaphores more efficient than message passing? [4]

OR

Q6) a) What is the basic idea of client-server IPC Pattern, multiple servers and clients IPC pattern. [4]

b) Why is indirection useful? How does indirection help in memory management? [4]

Q7) a) What is late binding? Give examples of late binding. Explain the design technique of late binding in virtual memory. [4]

b) Compare local and global page replacement. Mention advantages of each. [4]

OR

Q8) a) State and explain the difference between caching and hinting. [4]

b) Write the significance of DMA controller. Give any two advantages of a DMA device controller over a Non-DMA device controller... [4]

Q9) a) Define [4]

i) Contrast seek time.

ii) Latency Time.

iii) Adjoined Directories.

iv) Block device and character device.

b) Compare [4]

i) Batching and aging.

ii) Logical and physical disks.

OR

Q10)a) What is the relationship between users and processes in terms of protection? Why protection of resources is important? **[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]**

Q11)a) What is meant by consumable resource? Is preemption of resource possible? If yes state with example. **[5]**

b) What is Little Law? Explain the mathematical model of scheduling as a system of queues. **[4]**

OR

Q12)a) How software protection mechanism is implemented in operating system? **[4]**

b) What is difference between authentication and authorization? Can we use RSA algorithm for authentication? If yes how to use it? **[5]**

