M.E. First Semester (Information Technology) (Full Time) (C.G.S.)
13418 : Operating System Configuration : 1 NMEF 1

P. Pages : 2   AU - 3301

Time : Three Hours ||| ||||| ||| ||||| Max. Marks : 80
                                              02 94

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Illustrate your answer necessary with the help of neat sketches.
3. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) Define term process. With the help of neat diagram, describe various states of process under   8
Linux. Give relevant system calls responsible for transaction from one state to another.

b) Differentiate between: 6
i) Device driver and device controller
ii) Task and Thread
iii) Multiprogramming and Multiprocessing

OR

2. a) Give salient features of Linux operating system, giving its advantages and disadvantages.   7

b) With the help of neat diagram, describe the kernel structure in Linux indicating various   7
components like processor management, memory management etc.

3. a) With reference to the interrupt, describe the sequence of operation from the moment an   7
interrupt occurs and till it is handled. Give the meaning of interrupt context.

b) Give and explain scheduler related system call under Linux.   6

OR

4. a) Difference between: http://www.sgbauonline.com   6
i) Interrupt ( ) and trap ( ) system call
ii) Fork ( ) and exec ( ) system call
iii) Sleep ( ) and wait ( ) system call.

b) What is meant by interrupt? Describe typical structure of the interrupt handler under Linux.   7

5. a) Difference between: 6
i) Reader lock & writer lock
ii) Binary & General semaphores
iii) Semaphores & completion variable

b) Enumerate and describe five causes of concurrency. How can a designer identify if race   8
condition may occur and the kernel code needs to be synchronized?

OR

6. a) Enumerate & describe three conditions that must be satisfied by a good solution to critical section problem. Give a solution to critical section problem using semaphores. Show that this solution satisfies all three conditions.   7

   b) What is meant by term atomic operation? Enumerate its advantages. Give and Explain two sets of interfaces of atomic operation.   7

7. a) Explain struct page structure giving the meaning of each field.   7

   b) Describe kmalloc ( ) and vmalloc ( ) functions.   6

OR

8. a) Difference between: 6
   i) Paging and segmentation
   ii) Pages and zones
   iii) Page fragment and page fault.

   b) Define three types of zones used by Linux kernel. How is 'ezone' represented.   7

9. a) What is super block object? How is it related with the dentry object & file object? Explain   6

   b) Describe various data structures associated with the process.   7

OR

10. a) With reference to virtual file system under Linux describe each of following: 6
    i) Dentry Object   ii) Super block object
    iii) File Object

    b) Describe file abstraction layer in Linux detail.   7

11. a) Differentiate between: 6
    i) Logical Address, Virtual address and Physical Address.
    ii) Physical Memory, Virtual memory and cache memory.
    iii) Memory Buffer, Page cache & Buffer cache.

    b) What is meant by portability of an operating system? Describe the features of Linux to support portability.   7

OR

12. a) What is the purpose of radix tree? Explain its role in page cache.   7

    b) Describe main memory organization as seen by Linux bringing out the meaning of various memory areas.   6

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