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Sixth Semester Examination-2007
OPERATING SYSTEM
Full Marks-70
Time-3 Hours

Answer question No. 1 which is compulsory and any five questions from the remaining questions.

The figures in the right hand margin indicate full marks for the questions.

1. *Answer the following questions :* 2×10

   (a) What are the main advantage of multi-programming?

   (b) What if purpose of medium-term-scheduler and short-term-scheduler ?

   (c) Define preemptable resource and non-preemptable resource ; give examples.

   (d) What resources are used when a thread is created ? How do they differ from those used when a process is created ?

   (e) Define deadlock. List types of resources we might consider in deadlock problems on computers.

   (f) What do you mean by weight -for- graph ?

   (g) What do you mean by safe state ?

   (h) How does the operating system determine what mode it is in ?

   (i) Why we say that modern operating systems are interrupt driven ?

   (j) What is the nucleus or kernel of an operating system ?

2. (a) A CPU scheduling algorithm determines as order for the execution of its scheduled processes. Given n process to be sche-duled on one processor, how many possible different schedules are there ? Give a formula in terms of n. (5

   (b) Consider a variant of the RR schedulling algorithm where the entries in the ready queue are pointers to the PCB. What would be the major advantages and disadvantages of this scheme ? (5

3. (a) What State four conditions of deadlock and explain how each condition can be satisfied ? (5

   (b) When do page fault occurs ?Describe the actions taken by the operating system, when a page fault occurs ? (5

4. (a) Explain a step-by-step manner and in detail how a context switching between a running process, P1, and the first process in the ready queue, P2 happens. (5

(b) Give several reasons why demand paging is the conventional wisdom in page fetch strategies. (5

5. (a) What are the differences between user-level threads and kernel -supported threads ?Under what circumstances is one type "better" than the other ? (5

(b) Explain the structure of a Process control Block.Explain how the process is created ? (

6. (a) Explain the difference between internal fragmentation and external fragmentation. Which one occurs in paging systems ? Which obe occurs in system using pure segmentation ?

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(b) What do you mean by inter-process communication mechanism associated with a Operating system ? Discuss the mechanism associated with pipe ().

7. Considering life cycle of an I/O request, explain the basic steps to transform I/O requests to hardware operation? (

8. (a) Describe three circumstances under which non blocking I/O should be used. Why not just implement non-blocking I/O and have processes busy-wait until their device is ready. ?

(b) Explain why SSTF scheduling tends to fervor middle cylinders over the innermost and outermost cylinders