5E3255-R

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B. Tech. (Sem. V) (Main) Examination, December - 2011
Computer Science
5CS5 Operating System (Common for Computer & IT)

Time : **3** Hours] [Maximum Marks : **80**
[Min. Passing Marks : **24**

Instructions to Candidates :

*Attempt any **five questions** selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. NIL 2. NIL

UNIT - I

1 (a) Write short note on early operating system. List the difference between Multiprogramming and Time-sharing systems. 8

(b) Explain the architecture of an operating system. 8

OR

1 (a) List out the various process states and briefly explain with a state diagram. 8

(b) What do you mean by processor scheduling ? Explain the various levels of scheduling. 8

UNIT - II

2 (a) In an OS that supports threads, is there one stack per process of one stack per thread with
(i) Kernal-level threads
(ii) User level threads 8

(b) A distributed system using mailboxes has two IPC primitives, send (pid. msg) and receive (pid, msg). The receive primitive blocks if no message from process pid is available, even though message may be waiting from other processes. There are no shared resources. Processes communicate frequently. Is deadlock possible ? Discuss.

8

OR

2 If there are a large number of processes resident in memory, there will almost always be a ready process when a page fault occurs. Hence. CPU utilization will be high. If a large amount of memory is allocated to each of a few processes, then page faults will be infrequent. Hence, CPU utilization will be high.

(i) Which of these arguments is correct ?

(ii) What is the best policy ?

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UNIT - III

3 (a) How does a semaphore solve the critical section problem ? Discuss whether semaphores satisfy the three requirements for a solution to the critical section problem.

8

(b) A barbershop consists of a waiting room with 'n' chairs and the barber room containing the barber chair. If there are no customers to be served, the barber goes to sleep. If a customer enters the barbershop and all chairs are occupied, then the customer leaves the shop. If the barber is busy but chairs are available then the customer sits in one of the free chairs. If the barber is asleep the customer wakes up the barber. Write a program to coordinate the barber and the customer.

8

OR

3 Explain the Banker's algorithm for dead-lock avoidable.

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UNIT - IV

4 (a) Given memory partitions of 100 K, 500 K, 200K and 600K (in order), how would each of the First-fit, Best-fit algorithms place processes of 222 K, 417 K, 162 K and 428 K (in order) ?: Which algorithm makes the most efficient use of memory ?

8

(b) Write down the different issues in real time scheduling.

8

OR

(b) Explain any four page replacement algorithms.

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UNIT - V

5 Discuss the following disk scheduling algorithms.

(i) Shortest Seek Time First

(ii) First Come First Served

(iii) SCAN

(iv) C-Look

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OR

5 Explain how process management is done in Linux ?

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