T.E Information technology Sem V Nov 2010
operating system for computation Devices

VT-0001-10-3

Con. 5509–10. **(REVISED COURSE)** **GT–6786**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question **No. 1** is **compulsory**.
(2) Attempt any **four** questions out of remaining **six** questions.

1. (a) What is Operating System ? Explain multiprogramming and time sharing operating system. **10**
   (b) What is disk scheduling ? What are various disk scheduling algorithms ? Explain the criteria for selecting the best disk scheduling algorithm. **10**

2. (a) What is RTOs ? Give the classification of RTOs and comparison of any two RTOs. **10**
   (b) Calculate Hit and faults using FIFO, OPT and LRU page replacement policies for the following page sequences :– **10**
   2, 3, 5, 4, 2, 5, 7, 3, 8, 7
   Assume page frame size is 3.

3. (a) What are the various buffering techniques ? Explain each one in detail. **10**
   (b) Give five memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (in order) how would the first-fit, best-fit and worst-fit algorithms place processes of 212 KB, 417 KB, 112 KB and 426 KB (in order) ? Which algorithm makes the most efficient use of memory ? **10**

4. (a) Explain various file allocation methods. **10**
   (b) Consider the following Snapshot of a system :– **10**

Processes	Allocation	Max	Available
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Answer the following questions using the Banker's algorithm.
   (i) What is the content of matrix Need ?
   (ii) Is the system in a safe state ?
   (iii) If the request from process P_1 arrives for (0, 4, 2, 0) can request be granted immediately ?

5. (a) What is Semaphore ? Explain different types of semaphore. 10
(b) Explain files in relation with following points :– 10
(i) File Structure
(ii) File Operation
(iii) File Access
(iv) File Types.

6. (a) Explain message based IPC with an example. 10
(b) Describe the differences among short term, medium term and long term schedulers. 10

7. Write short notes on any **four** of the following :– 20
(a) Race Condition
(b) Threads
(c) Network O.S Vs. Distributed O.S
(d) Symbian O.S
(e) Inode.

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