Registration No. :

Total number of printed pages – 3

B. Tech

PCCS 4304

Sixth Semester (Special /Back) Examination – 2013
OPERATING SYSTEM
BRANCH : AEIE, EC, ETC
QUESTION CODE : E 388
Full Marks – 70
Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

    (a) What is the difference between multiprogramming and multiprocessing operating system ?

    (b) What is Belady's anomaly and when it occurs ?

    (c) Describe paged-segmented memory management technique.

    (d) What is convoy effect ?

    (e) What is thread ? Why it is used ?

    (f) What is multilevel feedback queue scheduling ?

    (g) Draw the queueing diagram of process scheduling.

    (h) Differentiate between internal and external fragmentation.

    (i) What is the job of a scheduler ? What are the different types of schedulers available ?

   (j) Differentiate between logical file system and physical file system.

P.T.O.

2. (a) Discuss various types of operating system. 5

(b) Consider the following set of processes with the length of the CPU-burst time given in milliseconds : 5

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1,P2,P3,P4,P5, all at time 0.

(i) Draw four Gantt charts illustrating the execution of these processes using FCFS,SJF,RR(quantum = 1) scheduling.

(ii) What is the turnaround time of each process for each of the scheduling algorithms in part i ?

(iii) What is the waiting time of each process for each of the scheduling algorithms in part i ?
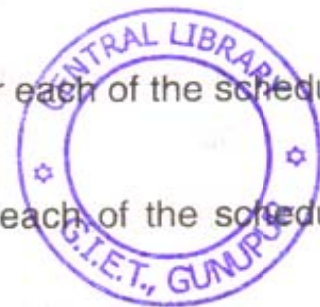
3. (a) Elucidate different classical problem of synchronization. 5

(b) What is a critical section problem ? How it is solved by semaphore ? 5

4. Consider the following snapshot of a system :

	Allocation	Max	Available
	A B C	A B C	A B C
P0	0 1 0	7 5 3	3 3 2
P1	2 0 0	3 2 2	
P2	3 0 2	9 0 2	
P3	2 1 1	2 2 2	
P4	0 0 2	4 3 3	

Answer the following question using Banker's algorithm :

(i) What is the content of the matrix Need ?

(ii) Is the system in a safe state ? If so, what is the safe sequence ?

(iii) If a request from a process P4 arrives for (3,3,0) can the request be granted immediately ? 10

5. (a) What is a deadlock ? How deadlock detection and prevention is achieved ? 5

(b) Consider the following page-reference string : 5

1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6

How many page faults would occur for the following replacement algorithms, assuming three, four, five frames ? (all frames are initially empty)

LRU replacement ,FIFO replacement ,Optimal replacement.

6. (a) Describe different file access methods in detail. 5

(b) Explain the cause of thrashing. Describe the working set model in this context. 5

7. (a) Write the uses of ten different UNIX commands. 5

(b) How security is achieved in Linux system ? 5

8. Explain any **two** in brief : 5×2

(a) Monitors

(b) PCB

(c) IPC

(d) TLB.

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