Registration No. :

Total number of printed pages – 2

B. Tech

PCCS 4304 (New)

Sixth Semester (Back) Examination – 2013

OPERATING SYSTEM

BRANCH : EEE, ELECTRICAL, IEE

QUESTION CODE : B300

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 are batch systems ?

   (b) What is process control block ?

   (c) What are the various file operations ?

   (d) What are the benefits OS co-operating process ?

   (e) What is the use of inter process communication ?

   (f) What is preemptive scheduling ?

   (g) Define throughput.

   (h) What is turnaround time ?

   (i) Define logical address and physical address.

   (j) What is a pure demand paging ?

2. (a) Distinguish between multiprogramming and multiprocessing. What are the key motivations for the development of each ? 5

   (b) Why are distributed systems desirable ? 5

3. (a) What are the major activities of an operating system in regard to file management ? 5

   (b) Write the differences between short-term, medium-term, and long term scheduling ? 5

P.T.O.

4. Consider the following set of processes, with the length of the CPU burst time given in nanoseconds :

Process	Burst Time	Priority
P_1	350	5
P_2	125	2
P_3	475	3
P_4	250	1
P_5	075	4

The processes are assumed to have arrived in the order A, B, C, D, E, all at tome 0 (zero). Draw Gantt charts illustrating the execution of these processes using FCFS, SJF, and RR (quantum = 50) scheduling. Calculate the turnaround time and waiting time of each process for each of the scheduling algorithm.   10

5. (a) What is meant by "livelock" ? How it is different from a deadlocked situation.   5

(b) Explain the Banker's algorithm for deadlock avoidance.   5

6. (a) Write the differences between internal and external fragmentation.   5

(b) Why are segmentation and paging sometimes combined into one scheme ?   5

7. Consider the following page reference string for a memory with three frames :

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

How many page faults would occur for the following page replacement algorithms ? Remembers all frames are initially empty.   10

(a) FIFO replacement

(b) LRU replacement

(c) Optimal replacement.

8. (a) Explain the schemes for defining the logical structure of a directory.   5

(b) Write difference between disk management and swap-space management.   5