

B.E. (ETC) 6th Semester Final Examination, 2010
Subject: System Software

Time: 3 hrs , , j Paper code: ET603
 Full marks: 70

First Half

Attempt Question No. 5 and any TWO from the rest

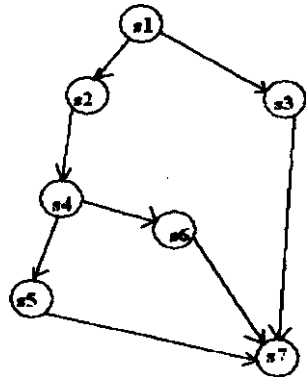
1. Discuss the shortest job first algorithm. Discuss its advantages and disadvantages. For a preemptive SJF scheduler given below the details of four processes

Process ;	Arrival time	Burst time
P1	0	8
P2	1	4
P3	2	9
P4	3	5

Calculate their average waiting time and average turn around time using Gantt -Chart.

15

2. What are concurrent processes? For the precedence graph shown below write down the language specification using 'Fork' and 'Join'.



15

3. What are the basic requirements for critical section problem?

Write down the complete algorithm to ensure that two processes should not enter their critical section at the same time. Also discuss how the algorithm satisfies the basic requirements.

15

4. What is 'deadlock'? What are the necessary conditions for deadlock? Write 'Safety algorithm **Jo** for handling deadlock. Write Avoidance algorithm for deadlock using resource allocation graph.

15

5. Write short note on (any one)

5

- i) Mid-term scheduler
- ii) Multi level feedback queue scheduling
- iii) Algorithm for solving Readers/Writes Problem

Second Half

Attempt Question No. 9 and any TWO from the rest

6. What do you understand by 'process*' in an Operating System? Explain process state transitions with suitable block diagram. How do cooperative processes communicate in a shared-memory environment? Explain the indirect method of inter-process communication.

15

7. How do logical addresses convert into physical addresses using relocation and limit register? Why multiple-partition contiguous memory allocation scheme suffers from external fragmentation.?What is paging and how does it solve the fragmentation problem? Describe different hardware implementation method of page table. Define effective access' time and hit ratio in this regard.

15

8. What is link allocation method of disk space? Why is it preferred over contiguous allocation? What are its disadvantages? Describe the file allocation table (FAT) used by MS-DOS. What do you understand by disk scheduling? Explain the SCAN and C-SCAN disk scheduling schemes with suitable example.

15

9. Write short note on (any one)

5

- i) Demand Paging Scheme
- ii) Bad-Block disk management
- iii) LRU page replacement algorithm