University of Technology
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Software Branch
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Final Examination
2006-2005
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4th Class
Operating System
Time: 3 Hours

Q1 / Define only eight from the following:-

1- Operating system **2- Context switch** **3- Base and limit**
4- Process Control Block **5-Waiting time** **6- Deadlock**
7- Starvation and aging **8- Lightly coupled system**
9- Systems list of known processes **10- cylinder**

Q2 /

a- If you have the following request in a disk queue 98, 183, 37, 122, 14, 124, 65, 67 and the disk head is initially at cylinder 37, use the FCFS scheduling and the SSTF(shortest distance) scheduling to serve this request and see which one is better?

b- Consider a system with five processes and three resource type. Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. At time T_0 the following snapshot has been taken:

Process	Allocation			Max		
	A	B	C	A	B	C
P_0	0	1	0	7	5	3
P_1	2	0	0	3	2	2
P_2	3	0	2	9	0	2
P_3	2	1	1	2	2	2
P_4	0	0	2	4	3	3

Is the system currently in a safe state or not and why?

c- Given the following four processes, with the length of the CPU – burst time and the arrival time, use the (SJF) preemptive, then use the (RR) with Q = 5 , and compare between them

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

Q3 / Answer only two ((a) should be included)

a- What are the process states, draw the process state diagram with suspend and resume, then explain each state and transitions briefly?
b- What are the controls that provided by the operating system for the process and file manipulation? (count only)
c- What are the methods of handling deadlocks, explain each one briefly?
d- What are the general methods that used to pass the parameters to the operating system?

Q4 / Answer only one

a- What are the necessary conditions that cause a deadlock situation?
b- What are the five major categories of system calls?