Roll No. _____

Total No. of Questions: 09] [Total No. of Pages:

Paper ID

B.Tech. (Sem.)

OPERATING SYSTEM (BTCS 401)

Time: 03 Hours **Maximum Marks: 60**

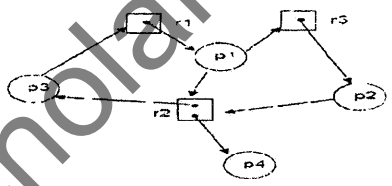
Instruction to Candidates:

1) Section - A is Compulsory.
2) Attempt any Four questions from Section - B.
3) Attempt any two questions from Section - C.

Section-A

Q1 a)	What are the main purposes of an Operating System?	02
b)	What is the role of Translation Look aside-Buffer (TLB).	02
c)	What is the difference between Short term Scheduler and Long term scheduler?	02
d)	What are disadvantages of FCFS scheduling algorithms?	02
e)	What is the difference between interrupt and exception?	02
f)	What is the need of Segmentation?	02
g)	What resources are used when a thread is created? How do they differ from those when a Process is created?	02
h)	Differentiate between multitasking and multiprogramming systems.	02
i)	Differentiate between Physical and logical file system.	02
j)	Describe the action taken by Kernel to switch context among Processes.	02

Section-B

Q2	What is deadlock in operating system? Examine whether the system whose resource allocation graph is given below is deadlocked or not. What steps can be taken by OS to overcome deadlock. 	05
Q3	Explain Demand paging? How demand paging can be implemented with virtual memory?	05
Q4	Define Thrashing. What is the cause of thrashing? How does the system detect thrashing?	05
Q5	Consider a memory-management system based on paging. Let the total size of the physical memory be 2GB laid out over pages of size 4KB. Let the logical address space of each process be limited to 128MB. Based on the information above, determine the physical address layout in the system. How many physical frames are there in the system?	05
Q6	Consider three CPU-intensive processes, which require 10, 20 and 30 time units and arrive at	05

	times 0, 2 and 6, respectively. How many context switches are needed if the operating system implements a shortest remaining time first scheduling algorithm? Do not count the context switches at time zero and at the end.	
	Section-C	
Q7	What is meant by I/O Scheduling? List the I/O scheduling algorithms. Compare and contrast typical algorithms.	10
Q8	Define fragmentation. How it can be controlled? Describe the difference between external and internal fragmentation. Indicate which of the two are most likely to be an issue on a) simple memory management machine using base limit registers and static partitioning, b) similar machine using dynamic partitioning.	5 5
Q9. a) b)	Explain the architecture of UNIX Operating System. What is operating system security? How do operating systems contribute to system security?	10