Registration no: | | | | | | | | | | |

Total Number of Pages: 02 **B.Tech.**
PCS5G001

5th Semester Regular Examination 2017-18
Operating Systems
BRANCH : CSE
Time: 3 Hours
Max Marks: 100
Q.CODE: B305

Answer Question No.1 and 2 which are compulsory and any four from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions:** **(2x10)**

a) The interval from the time submission of a process to the time of completion is termed as _____.
(a). Throughput (b). Turnaround Time (c). Waiting Time (d). Response Time

b) Each process in a system has a segment of code, called _____, in which the process may be changing common variables, updating a table, writing a file.
(a). Critical section (b). semaphore (c). race condition (d). segment table

c) A solution to the problem of indefinite blockage of low-priority process is _____.
(a). Priority Scheduling (b). Paging (c). aging (d). None Of These

d) Which page replacement algorithm is not practically possible?
(a). FIFO (b). LRU (c). Optimal (d). None Of These

e) The hole created within a block of memory is fragmentation.
(a). External (b). Internal (c). Immediate (d). None of These

f) Which section is shared by a Process and its thread?
(a). stack (b). register (c). code (d). both a and b.

g) Which scheduler is responsible for selecting a good process mix of I/O-bound and CPU-bound?
(a). short-term (b). long-term (c). medium-term (d). average-term

h) Which one mapthe logical address to physical address?
(a). processor (b). MMU (c). memory address register (d). none of these

i) Which makes possible transfer of data from and to the memory without help of main CPU?
(a). Bus (b). DMA (c). IDE (d). none of these

j) Which of the scheme describe that the IO device are accessed by generating a memory address?
(a). Shared memory (b). IPC (c). Memory-Mapped IO (d). IO-Mapped Memor

Q2 **Answer the following questions:** **(2×10)**

a) What is the difference between binary and counting semaphores?

b) What is the purpose of medium-term-scheduler and short-term-scheduler?

c) What are the basic functions of an operating system?

d) What is belady'sanamoly ?

e) Define Thrasing.

f) A computer has 6 tape drives among n programs. Each need two tape drives. For a system to be deadlock free what is maximum value of n

g) What is spooling?

h) What is the difference between multiprogramming and multitasking?

i) What is a process? What is a PCB?

j) What is the advantage of using threads compared to processes?

Q3 **a)** Discuss the Multilevel feedback Scheduling and write its advantages. For the three processes P1,P2,P3 with CPU burst time of 30 ms, 6 ms, and 8 ms respectively, find the average TAT, average waiting time and average ressopnse time with time quantum 5ms.Assume all the jobs are available at the same time. **(10)**

b) Write about Segmentation with example. Discuss basic difference between paging and Segmentation. **(5)**

Q4 **a)** What is deadlock? What are the necessary and sufficient conditions for deadlock to occur in a system? **(10)**

For the following data

	Allocation	Max
P0	0 1 0	7 5 3
P1	2 0 0	3 2 2
P2	3 0 2	9 0 2
P3	2 1 1	2 22
P4	0 0 2	4 3 3

Is the system safe? If so find the safety sequence.

b) What do you mean by inter-process communication mechanism? Describe different models associated with IPC? **(5)**

Q5 **a)** Write about Fragmentation, types of Fragmentation and their solution. **(10)**
Given memory partitions of 100k, 500k, 200k, 300k and 600k (in order),how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212k, 417k, 112k and 426k (in order)? Which algorithm makes the most efficient use of memory?

b) If hit ratio to a TLB is 80% and it takes 15 ns to search the TLB and 150 ns to access main memory, then what must be the effective memory access time in ns? **(5)**

Q6 **a)** What is the basic operational difference between SCAN, C-SCAN and LOOK scheduling algorithm? **(10)**
What will be the total head movement if disk queue with request for I/O is in order 98,153,37,122,14,124,65,67 and uses SSTF disk scheduling algorithm?

b) Define RAID and describe their levels. **(5)**

Q7 **a)** What is Pure Demand Paging and how it differs from Demand Paging? **(10)**
Consider the following page reference string:1,2,3,4,5,6,1,2,3,4,5,1,2,3,4,1,2,3,1,2,1.If the process is allocated four frames how many page faults would occur if page replacements are done using FIFO and LRU algorithms.

b) Write about Paging with TLB by a suitable example? **(5)**

Q8 **a)** Explain different file allocation method. Write about different file access method with example. **(10)**

b) Explain the role of Storage Area Network. **(5)**

Q9 **a)** **Write short answer on any TWO :** **(10)**

i) Swap-Space Management
ii) VM ware
iii) Domain Name Systems
iv) Kernel I/O Subsystem

b) Explain Distributed systems and Real-time systems. **(5)**