Registration No : | | | | | | | | | | |

Total Number of Pages : 02 **B.Tech**
PCS5I101

5th Semester Regular / Back Examination 2019-20
OPERATING SYSTEMS
BRANCH : CSE
Max Marks : 100
Time : 3 Hours
Q.CODE : HRB071

Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1 **Only Short Answer Type Questions (Answer All-10)** **(2 x 10)**

a) Which process can be affected by other processes executing in the system?
b) When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called?
c) Give some benefits of multithreaded programming.
d) What are necessary conditions which can lead to a deadlock situation in a system?
e) What factors determine whether a detection-algorithm must be utilized in a deadlock avoidance system?
f) Define overlays?
g) List out the disadvantages of paging and segmentation?
h) When does thrashing occur?
i) When designing the file structure for an operating system, what attributes are considered?
j) What is the purpose of an I/O status information?

Part- II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)** **(6 x 8)**

a) What are the differences between Batch processing system and Real Time Processing System?
b) Define a process scheduler? State the characteristics of a good process scheduler?
c) What is a thread. Distinguish between thread and process.
d) Illustrate the segmentation technique and why is it needed?
e) Explain how contiguous and non-contiguous memory are being allocated?
f) State virtual memory concept. How demand paging is done through it?
g) Describe Banker's algorithm with an example.
h) Specify about the IPC mechanism.
i) How many types of semaphores are there? Explain about it.
j) Differentiate between mutex and semaphore.
k) Design the hard disk structure.
l) Write short notes on DNS and VM ware and LINUX system.

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

Q3	Consider 5 no of processes P1,P2,P3,P4,P5 which gives arrival time 5,6,4,0,9 and brust time 5,10,2,6,5. Calculate average waiting time by using FCFS,SJF,SRTF and RR algorithm with time quantum of 4 ms.	**(16)**
Q4	Discuss how deadlock can be avoided and prevented.	**(16)**
Q5	When does a page fault occurs? Explain various page replacement strategies/algorithms. Consider a memory with 3 frames. The reference string is 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Find out no of page faults.	**(16)**
Q6	Design and explain the working principle of DMA controller.	**(16)**