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

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

PCS5G001

5th Semester Regular / Back Examination 2019-20

OPERATING SYSTEMS

BRANCH : CSE

Max Marks : 100

Time : 3 Hours

Q.CODE : HRB457

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) What is the main purpose of an operating system?

b) To access the services of operating system, the interface is provided by the _____.

c) Define Dispatcher, dispatch latency.

d) How many types of fragmentation occur in Operating System? How they can overcome?

e) The bounded buffer problem is also known as _____.

f) Which facility dynamically adds probes to a running system, both in user processes and in the kernel?

g) Specify the benefits of multithreaded programming?

h) Differentiate between mutex and semaphore.

i) Enlist the different RAID levels.

j) Define Belady's Anomaly.

Part- II

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

a) What is the main advantage of the layered approach to system design? Explain with diagram.

b) Design the structure of process control block.

c) Define system calls. Describe about the different operations done by several system calls.

d) Which are the necessary conditions to achieve a deadlock?

e) Given a memory partition having hole of 100k, 500k, 200k, 300k, 600k in order. How process of 212k,417k, 112k, 420k. Can be fit into those holes in order by using 4 partition selection algorithm.

f) Consider Logical Address Space is 256mb, Physical Address is 25 bits, offset field contains 13 bits. Find out page size, no of frames, no of pages.

g) State and explain Banker's algorithm.

h) Explain paging technique with TLB. Find out the hit ratio required to reduce the effective memory access time of 200 ns without TLB to 140 ns with TLB. Assume TLB access time is 25 ns.

i) Write short answer on: Linux system, VM ware.

j) Enlist the various File Access methods.

k) Suppose main memory has 3 frames & page nos which are going to be referenced are 5,0,3,9,4,7,6,0,1,0,4. Then find out total page fault & page hit.

l) Explain cycle stealing method and IPC mechanism.

Part-III

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

Q3 What are the different scheduling algorithms? Calculate the average waiting time of the given processes P1, P2, P3, P4, P5 with arrival time 5, 6, 4, 0, 9 and burst time 5, 10, 2, 6, 5. Design a Gantt chat. **(16)**

Q4 Discuss about the deadlock prevention and avoidance techniques. **(16)**

Q5 For what types of operations is DMA useful? Justify your answer. Describe how DMA controller works. **(16)**

Q6 Required blocks which are going to be accessed from a disk driven are on the cylinder. 98, 183, 37, 122, 14, 124, 65, 67. Disk head is initially at cylinder 53. Find out total no of head movements using different types of scheduling algorithm. **(16)**