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

Total Number of Pages: 03 **B.Tech**
PCS5I101

5th Semester Regular Examination 2017-18
Operating System
BRANCH: CSE
Time: 3 Hours
Max Marks: 100
Q.CODE: B311

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: multiple type or dash fill up type** **(2 x 10)**

a) To access the services of operating system, the interface is provided by the:
(a) system calls
(b) API
(c) assembly instructions
(d) library

b) When a page fault occurs before an executing instruction is complete :
a) the instruction must be restarted
b) the instruction must be ignored
c) the instruction must be completed ignoring the page fault
d) None of the mentioned

c) Consider a machine in which all memory reference instructions have only one memory address, for them we need at least _____ frame(s).
a)one
b)two
c)three
d) None of the mentioned

d) The maximum number of frames per process is defined by :
a) the amount of available physical memory
b) Operating System
c) instruction set architecture
d) None of the mentioned

e) _____ replacement allows a process to select a replacement frame from the set of all frames, even if the frame is currently allocated to some other process.
a) Local
b) Universal
c) Global
d) Public

f) Which one of the following is the address generated by CPU?
physical address
(b) absolute address
(c) logical address
(d)none of the mentioned

g) Program always deals with:
A. logical address
B. absolute address
C. physical address
D. relative address

h) Operating System maintains the page table for:
A. each process
B. each thread
C. each instruction
D. each address

i) In contiguous memory allocation :
A. each process is contained in a single contiguous section of memory
B. all processes are contained in a single contiguous section of memory
C. the memory space is contiguous
D. None of these

j) With relocation and limit registers, each logical address must be _____ the limit register.
A. less than
B. equal to
C. greater than
D. None of these

Q2 **Answer the following questions: Short answer type** **(2 x 10)**

a) What is overlay? What is the use of it.
b) What is preemptive multitasking?
c) Explain Belady's Anomaly?
d) Define the term thread and process. How an operating system deals with inter processing communications.
e) Compare stateful and stateless file services.
f) What is meant by mounting? Give its advantage.
g) Give the necessary conditions for the deadlock to occur.
h) Show that mutual exclusion may be violated if the signal and wait operations are not executed automatically.
i) Define context switch.
j) What do you mean by WORM disk?

Q3 **a)** Explain the different page replacement algorithm with examples. **(10)**

b) Explain the use of semaphores in concurrent system. **(5)**

Q4 **a)** Explain the concept of demand paging in detail with neat diagrams. **(10)**

b) Explain the file system along with its different components. **(5)**

Q5 **a)** What is IPC? Explain the requirements and implementations of IPC. **(10)**

b) Explain the following sets of processes, with the length of CPU burst time given in ms. **(5)**

Process	Burst time
P1	10
P2	1
P3	2
P4	5

Find the turn-around time and waiting time of each process using FCFS,SJF and Round robin (quantum=1) scheduling algorithm.

Q6 **a)** How are static and dynamic linking handled in memory management. **(10)**

b) Discuss the execution of remote procedure call and remote method innovation with supporting diagrams. **(5)**

Q7 **a)** Discuss how scheduling algorithms are selected for a system. What are the criteria considered ? Explain different evaluation methods. **(10)**

b) Consider the following page reference string: 1,2,3,4,2,1,5,6,1,2,3,7,6,3,2,1,2,3,6. How many page faults would occur for the LRU,FIFO,LFU and optimal page replacement algorithms assuming two and five frames? **(5)**

Q8 **a)** Explain how two process and multiprocessor solutions are used for critical section problem. **(10)**

b) Explain the file access methods used in operating design. **(5)**

Q9 **a)** Explain the banker's algorithm for deadlock avoidance. **(10)**

b) What is demand paging? Explain. **(5)**