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Total Number of Pages: 03

B.Tech
PCS51101

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)