Examination NOV/DEC 2018

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SUBJECT CODE NO:- H-523
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT)
Operating System
(REVISED)

[Time: Three Hours]   [Max.Marks:80]

Please check whether you have got the right question paper.

N.B
1. Solve 3 questions from each section.
2. Question no. 1 from section A and Question no.6 section B, are compulsory.
3. From the remaining questions in section A and B, solve any two questions.

Section A

Q.1	A) Compare Linux and Windows OS in detail.	05
	B) Define process. Explain various process states with a diagram.	05
Q.2	a) Examine monolithic operating system structure in detail.	07
	b) Explain different system calls for the Windows Win 32 API.	08
Q.3	a) Discuss solution to Producer – Consumer problem using sleep ( ) and wakeup ( ).	07
	b) Explain following: a. Race condition b. Mutual exclusion c. Busy waiting d. Critical section	08
Q.4	a) Explain how file system is implemented and managed using inodes.	07
	b) Explain how files are structured and named in an operating system design.	08
Q.5	a) Explain priority scheduling algorithm with an example.	07
	b) Differentiate between time sharing system and Simple batch System with essential properties.	08

Section B

Q.6	a) Discuss the following related to disk space management a. Block size b. Keeping track of free blocks.	05
	b) What is the purpose of paging in the page tables?	05

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Q.7   a) Given five memory partitions of 100 KB, 500KB, 200KB, 300KB, and 600 KB (in order), 07
how would each of the first – fit, best – fit, and worst – fit algorithms place processes of
212KB, 417KB, 112KB, and 426 KB (in order)? Which algorithm makes the most efficient
use of memory?

        b) Suppose the OS on your computer uses the buddy system for memory management. 08
Initially the system has a 1 MB block of memory available, which begins at address 0.
Show the results of each request / release via successive figures.
A: Request 25K, B: Request 500K, C: Request 60K, D: Request 100K, E: Request 30K,
Release A, F: Request 20K.
After memory is allocated to process F, how much internal fragmentation exists in the
system?

Q.8   a) Explain how I/O can be performed using Interrupt driven I/O. 07

        b) Explain Goals of the I/O software in detail. 08

Q.9   a) For a deadlock to occur, which four conditions must hold? 07

        b) A system has 3 types as resources R1, R2, R3, their number of units are 3,2 and 2 08
respectively. Four processors P1, P2, P3, P4 are currently connecting for resources in the
following manner:
a. P1 is holding one unit of R1 and is requesting for one unit of R2.
b. P2 is holding two units of R2 and requesting for one unit each of R1 & R3.
c. P3 is holding one unit of R1 &. Is requesting one unit of R2.
d. P4 is holding two units of R3 & is requesting for one unit of R1.
    Determine which, if any, of the processes are deadlocked in this state.

Q.10   a) Explain optimal page replacement algorithm with an example. 07

        b) What is disk scheduling? Explain the various goals of disk scheduling. 08