TCS601   **37**   **Printed Pages : 4**

Paper Code & Roll No. to be filled in your Answer Book

Roll No. :

Even Semester Examination-2017

B.Tech. (Semester-VI)

OPERATING SYSTEMS

(TCS-601)

Time : 3 Hours   **Maximum Marks: 100**

Note : Attempt all questions, the marks assigned to each question is indicated at question itself.

Q1. Attempt any FOUR questions   [4 x 5=20]

   (i)   Define an Operating System ? What is system's viewpoint of an operating system ?

   (ii)   Explain the concept of Virtual Machines

   (iii) What are semaphores ? Explain any three use cases of semaphores.

   (iv) Discuss how readers writers problem can be solved using semaphores.

(v)   How is a system recovered from deadlock ?

(vi)   Explain paging with an example

Q2.   Attempt any FOUR questions   [4 x 5=20]

(i)   Explain the different file access methods.

(ii)   Describe the various directory structures

(iii)   What is thrashing ? explain

(iv)   Write short note on process management in Linux

(v)   Explain Linux file system

(vi)   What are monitors ? Explain with a neat diagram how monitors are used to solve bounded buffer problem

Q3.   Attempt any TWO questions   [2x 10=20]

(i)   Using Banker's algorithm determine whether the following system is in a safe state. If a request from process P_2 arrives for (0 0 2), can the request be granted immediately ?

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Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	0	2	0	0	4	1	0	2
P_1	1	0	0	2	0	1			
P_2	1	3	5	1	3	7			
P_3	6	3	2	8	4	2			
P_4	1	4	3	1	5	7			

(ii)   Describe the access matrix model used for protection purpose

(iii)   What is protection ? Distinguish between mechanism and policies. Explain briefly access matrix with domains as objects.

Q4.   Attempt any TWO questions   [2x 10=20]

(i)   What are translation load aside buffers (TLB) ? Explain TLB in detail with as simple paging system with a neat diagram

(ii)   Given the memory partitions of 100K, 500K, 200K, 300K, and 600K apply first fit and best fit algorithm to place 212K, 417K, 112K, 426K.

(iii)   Consider the following page reference string 7012030423032120170l for a memory with

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three (03) frames. How many page faults occur for LRU and FIFO page replacement algorithm ? which is efficient among both ?

Q5.   Attempt any TWO questions   [2x 10=20]

(i)   Explain process scheduling and kernel synchronization in detail

(ii)   Describe an i-process solution to critical section problem which uses test and set() hardware instruction. Prove how this algorithm satisfies all the requirements of critical section problem's solution.

(iii) Discuss any three threading issues that come with multithreaded programs

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