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10EC65

Sixth Semester B.E. Degree Examination, June/July 2018
Operating Systems

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What resource allocation function? Explain the strategies for resource allocation. **(04 Marks)**

b. With a neat block diagram of a model of a computer system, explain the program status word. **(08 Marks)**

c. Why I/O bound programs should be given higher priority in a multiprogramming system? Illustrate with timing diagram. **(08 Marks)**

2 a. Explain the layered structure of operating system. How it is superior compared to monolithic structure? **(04 Marks)**

b. What is virtual machine operating system? Explain VM/370 VMOS. **(08 Marks)**

c. Explain the structure of microkernel based operating system. **(08 Marks)**

3 a. What are fundamental process states? Giver the state transition diagram of a process. **(04 Marks)**

b. Explain the race condition in airline reservation system with an algorithm. **(08 Marks)**

c. Explain control synchronization and need for control synchronization with an example. **(08 Marks)**

4 a. Explain memory allocation model for a process. **(04 Marks)**

b. Discuss the techniques used to perform fresh memory allocation form a free list. **(08 Marks)**

c. Explain the implementation of non contiguous memory allocation using segmentation. **(08 Marks)**

PART – B

5 a. What is virtual memory? How the virtual memory is implemented? **(04 Marks)**

b. State and explain the principle of locality reference of a process. **(06 Marks)**

c. A page reference string and reference timing string for a process P as follows :
Page reference string : 0, 1, 0, 2, 0, 1, 2 - - - - - -
Reference timing string : $t_1, t_2, t_3, t_4, t_5, t_6, t_7$ - - - - -
Illustrate the operation of optimal, FIFO and LRU page replacement policies.
Assume there are 3 page frames allocated to process. **(10 Marks)**

6 a. What are the facilities provided by file system and IOCS? **(04 Marks)**

b. Discuss the linked allocation and File allocation table of disk space in file system. **(08 Marks)**

c. Explain File sharing semantics and disk space allocation in UNIX file system. **(08 Marks)**

7 a. Explain the fundamental technique of scheduling. **(04 Marks)**

b. Explain the operation of HRN policy of non-preemptive scheduling scheme for the following table. How starvation is over come in this scheme. **(10 Marks)**

Processes	P_1	P_2	P_3	P_4	P_5
Arrival Time	0	2	3	4	8
Service Time	3	3	5	2	5

c. List the main features of priority based scheduling and summarize its operations. **(06 Marks)**

8 a. What is message passing? Explain the issues in message passing. **(04 Marks)**

b. Illustrate the message passing using mailbox and explain its advantages. **(08 Marks)**

c. Discuss the inter process message communication in UNIX operating system. **(08 Marks)**

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