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)**

* * * * *