Exam.Code:0931
Sub. Code: 6365

1078
B.E. (Electronics and Communication Engineering)
Seventh Semester
Departmental Elective – III
EC-711: Operating Systems

Time allowed: 3 Hours Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. VII (Unit-III) which is compulsory and selecting two questions each from Unit I - II.*

x-x-x

UNIT – I

I. a) Enumerate the basic functions of operating system and explain each in brief.

b) What are real-time operating systems? How are they developed and implemented? Illustrate some applications where they can be used. (5,5)

II. a) Critically evaluate the method of message passing as a means of inter-process communication. Justify your answer with respect to Producer-Consumer problem.

b) Suppose that the three processes P1, P2 and P3 arrive for execution at the times indicated as (P1, 0.0, 7), (P2, 0.5, 4), (P3, 1.2, 2) where the second component of the triple is the time arrival and the third component is the burst time. Each process will run the listed amount of time. Use non-preemptive scheduling, and base all decisions on the information that you have at the time the decision must be made.

i) What is the average turnaround time for these processes with the FCFS scheduling algorithm?

ii) What is the average turnaround time for these processes with the SJF scheduling algorithm? (5,5)

III. a) Explain the concept of paged segmentation with an example. What is address translation in segmentation? Give an example.

b) What is thrashing in the context of virtual memory management? Discuss. (5,5)

UNIT – II

IV. a) Discuss in detail the various directory structures that are often used by operating systems. State the problems that are associated with each of these techniques stating suitable ways of handling them.

b) Explain various techniques implemented for free space management, discuss with suitable examples. (5,5)

P.T.O.

V. Assuming the operating system detects the system is deadlocked, what can the operating system do to recover from deadlock? Describe the general strategy behind deadlock prevention, and give an example of a practical deadlock prevention method. What must the banker's algorithm know a priori in order to prevent deadlock? (10)

VI. Compare and contrast:-

a) Apple's iOS versus Microsoft's Windows mobile operating systems

b) Disk Formatting versus Disk Scheduling (5,5)

UNIT – III

VII. Attempt the following:-

a) Program in execution is called a(n) _____.

b) What is the purpose of the system calls?

c) Briefly explain protection mechanisms in modern operating systems.

d) What is the difference between the linked and indexed file allocation schemes?

e) Explain the three time factors involved in positioning the disk head and reading/writing disk block. (5x2)

x-x-x