53 (IT 502) OPSY

2016

OPERATING SYSTEM

Paper : IT 502

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Briefly discuss the different operating system structures. 10

    (b) Discuss race condition with example. How can concept of critical region help to avoid race condition ? 10

2. *(a)* What is inter process communication ? Illustrate *any one* classical inter process communication problem. 10

(b) State the functions of system call. Write a C program to implement fork( ), exec( ) and read( ), write( ) system calls.

10

3. *(a)* Suppose that the following processes arrive for execution at the time indicated : 10

Process	Arrival Time	Burst Time
P1	0	10
P2	1	2
P3	2	3
P4	3	1
P5	4	5

What are the average waiting time and turnaround time for these processes with ? (Time quantum = 2)

(i) FCFS scheduling algorithm

(ii) SJF scheduling algorithm

(iii) Round Robin scheduling algorithm

(b) Why should page replacement be performed ? Compare FIFO, optimal and LRU page replacement algorithm with an example of your choice. 10

4. (a) State the Readers and Writer problem. Give an appropriate solution to the Readers and Writer problem using semaphores. 10

(b) How does deadlock avoidance differ from deadlock prevention ? Explain how Banker's algorithm is used in deadlock avoidance for a single resource with an example. 10

5. (a) What is an I/O module ? Explain briefly the *three* different I/O techniques. 10

(b) What are the First fit and Best fit memory allocation strategies ? Write some advantages of paging and virtual memory approaches. 10

6. Write short notes on : *(any four)*

4×5=20

(a) Process *Vs.* Thread

(b) Timesharing *Vs.* Multiprogramming

(c) Thread Scheduling

(d) Translation Lookaside Buffer

(e) Swapping.