53 (IT 502) OPSY

2018

OPERATING SYSTEM

Paper : IT 502 (Back)

Full Marks : 100

Time : Three hours

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

*Answer **any five** questions.*

1. Answer briefly : 5×4=20

   (a) Define Operating System. List the objectives of an operating system.

   (b) With a neat diagram, explain various states of a process.

   (c) Give the Peterson's solution to the critical section problem.

(d) Distinguish between Logical and Physical Address space.

(e) What is a Semaphore ? Also give the operations for accessing semaphores.

2. (a) What is a system call ? Explain the various types of system calls provided by an operating system. 10

(b) What are the advantages of inter-process communication ? Explain how communication takes place in a shared memory environment. 10

3. (a) Distinguish between preemptive and non-preemptive scheduling. Explain each type with an example. 10

(b) What is Dining Philosophers problem ? Discuss the solution to Dining Philosophers problem using semaphore. 10

4. *(a)* Suppose that the following processes arrive for execution at the time indicate : 15

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 *sec.)*

(i) FCFS scheduling algorithm

(ii) SJF scheduling algorithm

(iii) Round-robin scheduling algorithm.

(b) How does deadlock avoidance differ from deadlock prevention ? 5

5. *(a)* Why should page replacement be performed ? Compare FIFO, Optimal and LRU page replacement algorithm. 10

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

6. Write short notes on : ***(any four)*** 4×5=20

(i) Process *vs.* thread

(ii) Timesharing *vs.* Multiprogramming

(iii) Translation lookaside buffer

(iv) Virtual Memory

(v) Process Control Block.
