$2n07$

Subject Code—7252

P.G.D.C.A. EXAMINATION

(Second Semester)

OPERATING SYSTEMS

MS-08

Time : 3 Hours   *Maximum Marks :* 100

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Explain the four major functions of operating system.   **8**

    (b) Define the essential properties of the following types of operating systems :

    (i)   Batch

    (ii) Time sharing

    (iii) Real time

    (iv) Distributed.   **12**

2. (a) Explain the following methods of allocating the disk space :

  (i) Contiguous Allocation

  (ii) Linked Allocation.   12

  (b) Write a short note on File Protection. 8

3. (a) Explain the following types of CPU scheduling :

  (i) First-come, First served scheduling

  (ii) Shortest-job First scheduling

  (iii) Priority Scheduling

  (iv) Round Robin Scheduling.   16

  (b) Draw the Gantt. chart for SJF scheduling, considering the following set of processes that arrive at time O. with the length of CPU burst time given in m-sec. Also, calculate the average waiting time :   4

Process	Burst Time
P_1	10
P_2	3
P_3	19
P_4	82

4. (a) Explain the Internal and External fragmentation with the help of example.   8

  (b) Write short notes on the following :

  (i) First in first out replacement algorithm

  (ii) Least recently used algorithm

  (iii) Thrashing.   12

5. (a) Explain the First Come First Served (FCFS) and Shortest Seek Time First (SSTF) disk scheduling with the help of example.   10

  (b) Explain the various directory structures :

  (i) Single level directory

  (ii) Two level directory

  (iii) Tree structured.   10

6. (a) What are necessary conditions for dead-lock ?   5

  (b) Explain the deadlock avoidance. What is the concept of safe/unsafe state ?   10

  (c) Write a short note on Resource Allocation Graph.   5

7.   (a)   What is Semaphore ?   5

       (b)   Describe the term binary semaphore.   5

       (c)   What do you mean by Interprocess Communication ? Give its advantages. 10

8.   Write short notes on the following :   20

       (a)   MS-DOS

       (b)   LINUX

       (c)   Virtual Memory

       (d)   Demand Paging.