328672(28)

B. E. (Sixth Semester) Examination, April-May 2021

(New Scheme)

(Et&T Engg. Branch)

OPERATING SYSTEM

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

*Note : Part (a) is compulsory in each unit. Attempt any **two** parts from (b), (c) and (d).*

Unit-I

1. (a) What are the advantages of multiprocessing systems?   2

   (b) What is an Operating System? What are the services offered by it?   7

(c) Describe in brief what are the file allocation and access methods? 7

(d) Write short notes on : 7

    (i) Acyclic Graph Directories

    (ii) File Protection

Unit-II

2. (a) Define the contents of Process Control Block. 2

(b) Explain any three CPU scheduling algorithms and their evaluation. 7

(c) Suppose a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143 and the previous was at cylinder 125. The queue of pending requests in FIFO order is

86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

What is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for SSTF, SCAN and C-LOOK. 7

(d) Consider the following set of processes, with the length of the CPU-burst time give in milli seconds.

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The process are assumed to have arrived in the order P_1, P_2, P_3, P_4, P_5 all at time 0.

(i) What is the turn around times for FCFS, SJF, priority (smaller priority no. implies higher priority) and RR (quantum $= 1$) scheduling.

(ii) What is the waiting time for the above scheduling algorithms?

(iii) Which of the algorithm results in minimal average waiting time? 7

Unit-III

3. (a) Explain memory protection in brief. 2

(b) How is performance of demand paging measured? Explain how degree of multiprogramming is related to thrashing? 7

(c) What is Paging? How is it different from segmentation? 7

(d) Explain the following with the help of an example : 7
   (i) First Fit
   (ii) Best Fit
   (iii) Worst Fit

Unit-IV

4. (a) What are the necessary conditions for deadlock? 2

(b) Explain the importance of semaphores in concurrency? How are they implemented? 7

(c) What is meant by deadlock avoidance and deadlock prevention? Explain safety algorithm. 7

(d) Explain Readers Writers classical problem of concurrency. Write the code for it. 7

Unit-V

5. (a) Discuss the structure of Unix O.S. 2

(b) Discuss the layered architecture of I/O software. Explain the importance of each layer. 7

(c) What are distributed file systems and what is meant by location independence and two level naming? 7

(d) What are the various performance evaluation techniques? Explain them in brief. 7