

24252

B.Tech. 5th Semester (Information Technology)

Examination, December-2012

PRINCIPLES OF OPERATING SYSTEM

Paper-CSE-301-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt five questions with at least one question from each section and Q. No. 1 is compulsory.

1. (a) What is the purpose of command interpreter ?
- (b) Explain the criteria for choosing a CPU scheduling algorithm
- (c) Differentiate deadlock and starvation
- (d) What is the importance of protection in operating system ?
- (e) Write short notes on Sector queuing ? $5 \times 4 = 20$

Section-A

2. (a) Write short notes on the following : '10
 - (i) Time Sharing System
 - (ii) Real-Time System.
- (b) Explain the microkernel approach to operating system design. Also enumerate its advantages and disadvantages. 10

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[P.T.O.]

3. (a) (i) Define the difference between preemptive and non preemptive scheduling. State why strict non-preemptive scheduling is unlikely to be used in a computer centre.
- (ii) Explain the operation of multilevel scheduling. 10
- (b) Suppose the following processes arrive for execution at the time indicated. Each process will run the listed amount of time. In answering the questions, use non preemptive scheduling and base all decisions on the information you have at the time the decision must be made.

Process	Arrival Time	Burst time
P1	0.0	8
P2	0.4	4
P3	1.0	1

- (i) What is the average turn around time for these processes with the FCFS scheduling algorithm ?
- (ii) What is the average turn around time for these processes with the SJF scheduling algorithm ? 10

Section-B

4. (a) If FIFO page replacement is used with four page-frames and eight pages, how many page-faults will occur with the reference string 0 1 7 2 3 2 7 1 0 3 if the four frame are initially empty ? Repeat this problem for LRV. 10

- (b) (i) Consider the following segment table

Segment	Base	Length
0	219	600
1	2300	14
2	90	100
3	1327	580
4	1952	96

What are the physical addresses for the following logical addresses ? 10

- (a) 0, 430
 (b) 1, 12
 (c) 2, 500
 (d) 3, 400
 (e) 4, 110

- (iii) Page size are kept in powers of 2. Why ?

5. (a) What is demand paging ? Explain. 10
 (b) Differentiate between paging and segmentation. Which one is better ? Explain. 10

Section-C

6. (a) Which are the operation allowed to files ? 6
(b) Explain file allocation methods. 6
(c) Explain various file system services. 8
7. (i) What is a critical section ? What is the critical section problem ? List the constraints Dijkstra placed on solutions to the critical section problem. 10
(ii) Describe the producer-consumer problem and dining philosopher problem. 10

Section-D

8. (a) What is the need of threads ? Differentiate between user and kernel threads. 10
(b) Differentiate between interrupt driven I/O and programmed I/O. 10
9. Write short note on :
(a) Shell interpreter
(b) Windows NT Architecture. 10×2=20