5E1353

5E1353

B.Tech. V semester (Main) Examination, November - 2019
PCC/PEC Computer Sc. & Engg.
5CS4-03 Operating System
Common For CS,IT

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt **all ten** questions from **Part A**, **five** questions out of **Seven** from **Part B** and **Four** questions out of **Five** from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Part - A

(Answer should be given up to **25** words only)

All questions are **compulsory** **(10×2=20)**

1. What is semaphore?
2. Briefly explain the two methods of inter process communication.
3. What is starvation? How can we overcome it?
4. Differentiate between kernel and shell?
5. What is TLB? Explain its function.
6. Draw process state diagram.
7. Give the various disk scheduling methods.
8. What are the attributes of files?
9. Why page size is always power of 2?
10. What is a file system? What are various operations performed on a file?

Part - B

(Analytical/Problem solving questions)

Attempt any **five** questions **(5×8=40)**

1. What is paging? Explain with the help of a diagram.

2. Describe multilevel feedback queue scheduling with the help of an example.
3. Explain various strategies to deal with deadlocks? How deadlocks are detected and recovered?
4. Compare the methods by which we can access a file?
5. Explain the need and various services provided by operating system.
6. What do you mean by page - faults? When do page - falts occur? Describe the action taken by the O.S. when page - fault occurs?
7. Discuss the various directory structures.

Part - C

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any **Four** questions **(4×15=60)**

1. Find the number of page faults for the following input string using FIFO and LRU page replacement algorithms :

   1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3. (Consider frame size = 3).

2. Calculate the average waiting time & turnaround time of the system using preemptive SJF and Round Robin ($t_q = 2$) scheduling algorithms :

Process *Id*	Arrival time	Burst time
P1	0	3
P2	1	5
P3	2	2
P4	3	4
P5	4	1
P6	5	3

3. What are the different mobile operating systems used nowadays? Discuss their features.
4. Find the seek time for the given sequence :

   73, 87, 34, 43, 173, 65, 58, 4, 201 The disk head is at 36 and is moving downward. Total cylinders are 210.

   i) SCAN

   ii) SSTF

   iii) LOOK
5. What are threads? Discuss the advantages and disadvantages of using threads?