

Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

MORNING *Event*

[Total No. of Questions: 09]

16 JAN 2023

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Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 4th

Name of Subject: Operating System

Subject Code: PCIT-106

Paper ID: 16235

Detail of allowed codes/charts/tables etc. Nil

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) List three objectives of an operating system.
- b) Distinguish between hard real time systems and soft real time systems.
- c) Why page size is always power of 2?
- d) Why API's need to be used rather than system call?
- e) Is deadlock state more critical than starvation? Justify.
- f) What are the three methods for allocating disk space?

Part – B

[Marks: 04 each]

- Q2. Discuss the general structure of an operating system.
- Q3. State dining philosopher's problem and give a solution using semaphores. Write structure of philosopher.
- Q4. Describe necessary conditions for a deadlock situation to arise. Brief about different methods to handle deadlocks.

- Q5. The queue of requests in FIFO is 86,147,91,177,94,150,102,175,130. What is the total head movement needed to satisfy the requests for the following Scheduling algorithms FCFS, SJF, SCAN, LOOK, C-SCAN
- Q6. Discuss the LINUX operating system as a case study.
- Q7. Explain the following i) file types ii) file operation iii) file attributes.

Part – C

[Marks: 12 each]

- Q8. What is disk scheduling? Explain FCFS and SCAN disk scheduling algorithms.

OR

Distinguish between i) Process and Program ii) Multiprogramming and multiprocessing iii) Job scheduling and CPU scheduling

- Q9. Differentiate between the following a) Paging and Segmentation b) Page table and segment table c) internal and external fragmentation.

OR

What is virtual memory? Assume we have a demand paged memory. The page table is held in registers it takes 8ms to service a page fault if an empty page is available or the replaced page is not modified, and 20ms if the replaced page is modified. Memory access time is 100ns. Assume that the page to be replaced is modified 70% of the time. What is the maximum acceptable page fault rate for an effective access time of no more than 200ns?
