[Total No. of Questions: 09]
Uni. Roll No. ....

EVENING

3 0 JUN 2022

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Program: B.Tech. (Batch 2018 onward)
Semester: 04
Name of Subject: Operating System
Subject Code: PCIT-106
Paper ID: 16235

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)   What is an Operating System?

  b)   What is the difference between deadlock and starvation?

  c)   Define Virtual Memory and what are its advantages?

  d)   What is thrashing?

  e)   Explain Inter Process Communication.

  f)   What do you mean by PCB? What are its contents?

Part – B

[Marks: 04 each]

Q2.   What is a process? Explain and draw Process State Diagram.

Q3.   Write a brief note on Layered Architecture in reference to device management.

Q4.   What is a deadlock and what are the conditions to prevent it?

Q5.   What are the different access methods of files? How are they implemented?

Q6.   What are semaphores and its advantages? Explain two primitive semaphore operations.

Q7.   What is fragmentation? Explain its types and disadvantages.

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Part – C   [Marks: 12 each]   3 ० JUN 2022

Q8.   Consider the following set of processes, with the length of the CPU burst given in ms:

Process	Burst Time	Priority
P1	2	2
P2	1	1
P3	8	4
P4	4	2
P5	5	3

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5 at time 0.

a. Draw four Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: FCFS, SJF, non pre-emptive priority (a larger priority number implies a higher priority), and RR (quantum= 2).

b. What is the turnaround time of each process for each of the scheduling algorithms in part a?

c. What is the waiting time of each process for each of these scheduling algorithms?

d. Which of the algorithms results in the minimum average waiting time?

OR

Explain different types of operating systems in detail.

Q9.   Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous request was at cylinder 125. The queue of pending requests, in FIFO order, is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130

Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk-scheduling algorithms?

   a. FCFS   b. SSTF   c. SCAN   d. LOOK   e. C-SCAN   f. C-LOOK

OR

Given page reference string: 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6. Compare the number of page faults for LRU, FIFO and Optimal page replacement algorithm with frame size 4.

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