Code No: 154BR

R18

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech II Year II Semester Examinations, March - 2022
OPERATING SYSTEMS
(Common to CSE, IT, ITE)

Time: 3 Hours   **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

1.a) Discuss the Functionalities of Operating Systems in detail.
  b) What is a System call? Discuss major System calls of Operating Systems.   [8+7]

2.a) Distinguish between the client-server and peer-to-peer models of distributed systems.
  b) Discuss the various System components.   [7+8]

3.   List and explain the Scheduling Algorithms.   [15]

4.a) Explain the terms fork, exit, wait, waitpid, exec.
  b) Consider 3 processes P1, P2 and P3, which require 5, 7 and 4 time units and arrive at
      times 0, 1 and 3. Draw the Gant chart, process completion sequence and average waiting
      time for.
      i) Round-robin scheduling with CPU quantum of 2 time units.
      ii) FCFS   [7+8]

5.   Consider the following page reference string: 1, 2, 3, 4, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2,
      3, 6 How many page faults would occur for the FIFO replacement algorithm for 3 frames.
                                                                                      [15]

6.   Discuss how LRU and FIFO page replacement algorithms can be implemented on the
      following reference string when the numbers of frames are 3. Also, calculate the number
      of page faults. 3, 2, 1, 0, 2, 2, 1, 7, 6, 7, 0, 1, 2, 0, 3, 0, 4, 1, 5, 4, 5, 6, 7, 6, 7, 2, 4, 2, 7, 3.
                                                                                      [15]

7.   Compare the main memory organization schemes of contiguous memory allocation,
      pure segmentation and pure paging with respect to the following issues:
      a) External fragmentation.
      b) Internal fragmentation.
      c) Ability to share code across processes.   [15]

8.   List and explain the various methods for protection and access control.   [15]

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