R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, March - 2017
OPERATING SYSTEMS
(Common to CSE, IT)

Time: 3 hours
Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) Define system call. [2]
  b) Differentiate between multi programming and multi processing. [3]
  c) What is critical section problem? [2]
  d) How are processes managed in LINUX? [3]
  e) Differentiate between logical virtual and physical address. [2]
  f) Explain directory structure. [3]
  g) Give different RAID levels. [2]
  h) Discuss about swap space management. [3]
  i) Differentiate between unsafe state and dead lock state. [2]
  j) How access rights are revoked? [3]

PART - B
(50 Marks)

2.a) Briefly explain typical functions of an Operating System Kernel.
  b) What resources are used when a thread is created? How do they differ from those used when a process is created? [5+5]

OR

3.a) What are the different types of operating systems? Explain them in detail.
  b) What are the main characteristics of Real Time Operating System? [5+5]

4. Discuss readers/writers problem and give solution by using semaphores where readers have priority. [10]

OR

5. Construct the Gantt chart for a) Shortest job first b) Round Robin with q=3 c) Round robin with q=4 d) shortest remaining time first scheduling algorithms for the following. [10]

Process	P1	P2	P3	P4	P5
Arrival time	0	0	2	1	3
CPU Burst Time (in ms)	10	6	12	8	5

6. Explain how protection can be ensured using paging? [10]

OR

7.a) A process refers to 5 pages, A, B, C, D, and E in the order- A; B; C; D; A; B; E; A; B; C; D; E. If the page replacement algorithm is LRU, calculate the number of page faults with empty frames of size 4?

b) Explain the terms in Memory Partitioning with examples:
i) Fixed Partitioning   ii) Dynamic partitioning. [5+5]

8. Suppose the head of a moving head disk with 200 tracks, numbered 0 to 199, is currently serving a request at track 143 and has just finished a request at track 125.If the queue of requests is kept in FIFO order: 86, 147, 91, 177, 94, 150, 102, 175,130. What is the total head movement to satisfy these requests for the following disk scheduling algorithms?
(a) FCFS   (b) SCAN   (c) SSTF   (d) C- SCAN [10]

OR

9.a) What is a Directory? Write short note on Directory implementation.
b) Explain about linked allocation method of a file. [5+5]

10. A system has 3 devices D1, D2 and D3 and 3 processes P1, P2, and P3. P1 is holding D1 and waiting for D3. P2 is holding D2 and waiting for D1. P3 is holding D3 and waiting for D2.Draw resource allocation graph and wait-for graph. Is the system in deadlock state or not? Explain. [10]

OR

11.a) Explain about capability based systems.
b) Discuss about revocation of access rights. [5+5]

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