Code No: 115EH

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, May - 2018
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) Under what circumstances would a user be better off using a time sharing system rather than a PC or single user workstations? [2]
 b) What are tradeoffs inherent in handled computers? [3]
 c) In general one process is not allowed to access the memory of another process, then how shared memory is working? [2]
 d) Can a thread ever be preempted by a clock interrupt? If so, under what circumstances? If not, why not? [3]
 e) Under what circumstances do page faults occurs? [2]
 f) What is the purpose of paging the page tables? [3]
 g) How mounting takes place in different operating system? [2]
 h) In a disk jukebox, what would be the effect of having more open files than the number of drives in the jukebox? [3]
 i) What is Deadlock? How Deadlock can be avoided? [2]
 j) A system has p processes and r resources are available each process need maximum of m resources. What condition must hold to make system deadlock free? [3]

PART - B

(50 Marks)

2.a) What is System call? Discuss major System calls of Operating Systems.
 b) List and explain the major activities of an operating system with regard to file management. [5+5]

OR

3.a) Why is the separation of mechanism and policy desirable? Explain.
 b) Identify which of the functionalities listed below need to be supported by the operating system for (i) handled devices (ii) Real Time systems
 I) Batch programming
 II) Virtual Memory
 III) Time sharing [5+5]

4. How parent and child relationship is created between processes? Explain how parent and child behave on its termination. [10]

OR

5.a) Consider a system where counting semaphore initialized to +17, on this semaphore variable the various operations like 23P, 18V, 16P, 14V and 1P are performed. Then what is the final value of semaphore?

b) Describe the actions taken by a thread library to context switch between user level threads. [5+5]

6. Discuss the hardware support required to support demand paging. [10]

OR

7. Explain about FIFO, LRU page replacement algorithms with example. [10]

8. List and explain the different techniques used to improve the efficiency and performance of secondary storage. [10]

OR

9. What is file structure? How file structure is supported by different operating systems? [10]

10. Consider a system with three processes and four resources. Resource R1 and R3 with one instance, R2 with two instance, process P1 holding an instance of R2 and waiting for r1, process P2 is holding an instance of R1 and R2 and waiting for R3, process P3 is holding an instance of R3.
a) Draw resource allocation graph to the given system.
b) Is it possible to apply the Resource allocation graph algorithm to avoid deadlock? Explain. [5+5]

OR

11. Discuss the strengths and weakness of implementing an access matrix using access list that are associated with objects. [10]

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