

Code No: 843AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

MCA I Semester Examinations, December - 2019

OPERATING SYSTEMS**Time: 3hrs****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**5 × 5 Marks = 25**

- 1.a) Compare parallel and distributed systems. [5]
- b) Where and how data of a process is stored? [5]
- c) Differentiate between IPC on single computer system and Multiple computer system. [5]
- d) Define thrashing. Give reasons for its occurrence. [5]
- e) Discuss about directory structure. [5]

PART - B**5 × 10 Marks =50**

- 2.a) Briefly explain typical functions of an Operating-System Kernel.
- b) What are the different types of operating systems? Explain them in detail. [5+5]

OR

- 3.a) What is the purpose of an operating system?
- b) Explain various networking commands. [5+5]

4. Compare the performance of the Round Robin (quantum =3) and Shortest remaining time First (Preemptive) scheduling algorithms in terms of average turn-around time, and average waiting time for the following jobs? Illustrate the execution by using Gantt-Chart. [10]

Job	Burst Time	Arrival Time
1	10	3
2	10	4
3	2	1
4	11	2
5	5	0

OR

- 5.a) A system has 3 devices D1, D2 and D3 & 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.
- b) Explain Banker's algorithm for deadlock avoidance. [5+5]
- 6.a) Discuss producer - consumer problem?
- b) Give solution to producer - consumer problem using semaphores? [5+5]

OR

- 7.a) Describe dining-philosophers problem? Derive an algorithm to solve the problem using semaphores?
- b) State the requirements that a solution to the critical section problem must satisfy? [5+5]

- 8.a) With a neat diagram explain the steps in handling page fault?
b) Consider the page reference string 2, 0, 1, 3, 1, 0, 1, 5, 2, 4, 0, 3, 0, 4, 2, 4, 3, 4, 1, 4, 0.
How many page faults occur for the Optimal and LRU Page replacement algorithms with 4 frames each? [5+5]

OR

- 9.a) Explain Paging model of Logical and Physical memory with a neat diagram.
b) Differentiate between internal fragmentation and external fragmentation. [5+5]
- 10.a) Explain about the implementation of Directory.
b) Explain about linked allocation of a file. [5+5]

OR

11. Write short notes on a) Lseek b) stat c) ioctl. [10]

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