

R15

Code No: 823AA

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**MCA III 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) What is Operating system? What are the functions of Operating System? [5]
- b) What is CPU scheduling? Compare preemptive and non preemptive scheduling methods. [5]
- c) Compare paging and segmentation memory management techniques. [5]
- d) Explain in brief various approaches for free space management. [5]
- e) What is deadlock? Define the characteristics of a Deadlock condition. [5]

PART - B**5 × 10 Marks = 50**

- 2.a) Write in detail on the characteristics of distributed operating systems and real-time operating systems.
 - b) What is a virtual machine? Explain the virtual machine and its implementation. [5+5]
- OR**
- 3.a) What is system call? Explain the various types of system calls and its purpose.
 - b) Explain in detail on batch system and time shared system. [5+5]
4. Consider the following set of process with the length of CPU burst and arrival time given in milliseconds. Apply the R.R and FCFS scheduling algorithm with time quantum 2m/sec and Find average the Turnaround time and average waiting time of these processes. [10]

Process .No.	CPU burst time	Arrival time
P1	10	0
P2	3	2
P3	13	3
P4	6	10
P5	5	13

OR

5. Explain how to solve processes synchronization using Readers-Writes problem.[10]

6. Consider the following page reference string 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 how many page faults would occur for the following page replacement algorithm assuming three and four frames
- a) FIFO page replacement b) Optimal page replacement [5+5]
- OR**
- 7.a) What is virtual memory? Explain the demand paging and its performance.
- b) Explain the following
- i) Structure of Page Table ii) Thrashing [5+5]
- 8.a) Write a detail note on file allocation methods.
- b) Explain briefly about file sharing and protection. [5+5]
- OR**
9. What is disk accesses time? Explain various Disk Scheduling algorithms with Examples. [10]
10. What is a safe state? Explain Banker's algorithm for dead lock avoidance with example. [10]
- OR**
- 11.a) Explain the language based protection system with example.
- b) Write detail on Access matrix and its implementation. [5+5]

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