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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