Printed Pages: 4

NMCA 311

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012313 Roll No. | | | | | | | | | |

M.C.A

Regular Theory Examination (Odd Sem -III), 2016-17

OPERATING SYSTEMS

Time : 3 Hours *Max. Marks : 100*

Section - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

a) Give the features of symmetric multiprocessing systems?

b) What do you understand by System call? Explain.

c) Differentiate between Program and Process.

d) What is virtual memory?

e) What is thread? State the benefits of threads.

f) List the various approaches used for deadlock recovery.

g) What are the three requirements to be met by a solution to the critical section problem?

h) What is thrashing?

i) What is difference between logical and physical addresses?

j) How scheduling is performed in Linux systems?

Section - B

Note: Attempt any five questions from this section

(5×10=50)

2. Briefly explain the common classes of services provided by the various operating systems for helping the user and for ensuring the efficient operation of the system.

3. With a diagram, explain the different states of a process. Differentiate between long-term and short-term schedulers.

4. Suppose the following jobs arrive for processing at the times indicated. Each job will run for the listed amount of time.

Job	1	2	3
Arrival time	0.0	0.4	1.0
Burst time	8	4	1

i) Give a Gantt chart illustrating the execution of these jobs, using the non pre-emptive FCFS and SJF scheduling algorithms.

ii) What is turnaround time and waiting time of each job for the above algorithms?

iii) Compute average turnaround time if CPU is left idle for the first 1 unit and then SJF is used. (Job1 and Job2 will wait during this time).

5. What is producer - consumer problem of synchronization? Discuss how this classical problems can be solved by using semaphore?

6. What do you understand by Demand Paging? What are the steps taken by the system when a page fault occurs? Explain with suitable example.

7. Write short on paging and segmentation.

8. Suppose the position of cylinder is at 53. Sketch the graphical representation for the queue of pending requests in the order - 98, 183, 37, 122, 14, 124, 65, 67 for FCFS, SSTF and LOOK scheduling schemes. Give your comment on this scenario for the above schemes.

9. Describe the access matrix model used for protection in a computer system.

Section - C

Note: Attempt any 2 questions from this section.

(2×15=30)

10. 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 replacement algorithms?

i) LRU replacement.

ii) FIFO replacement.

iii) Optimal replacement.

Assuming four frames that all frames are initially empty. Which of the algorithms is most efficient in this case?

11. "A safe state is not a deadlock state but a deadlock state is an unsafe state". Explain. Discuss the different methods for handling deadlocks.

12. Write short notes on any two of the following :

a) File Systems.

b) Interprocess Communication.

c) Network Structure and Security.