5E5105

Roll No. : _____

Total Printed Pages : 3

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B. Tech. (Sem. V) (Mercy Back) Examination, November 2018
Computer Sc. & Engineering
SCS5A Operating Systems (CS, IT)

Time : 3 Hours

Total Marks : 80
Min. Passing Marks : 24

*Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT - I

1 (a) What is the need of BIOS ? Explain Boot strap loader also. **8**

(b) How an operating system works as a resource manager and virtual machine ? **8**

OR

1 (a) Explain the architecture of operating system. **8**

(b) What do you mean by processor scheduling ? Explain the various levels of scheduling. **8**

UNIT - II

2 (a) Describe the solution of Dining-Philosophers problem. **8**

(b) Consider the following set of processes with arrival time and CPU burst time given in ms.

Process	Arrival time	Burst time
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

What is the average waiting time for these processes with preemptive SJF scheduling ? **8**

OR

2 (a) What do you understand by Semaphores ? Can it be useful to solve reader-writer problem ? Explain. **8**

(b) What are different algorithmic solutions of Critical Section problem ? Explain. **8**

UNIT - III

3 (a) What is deadlock ? What are necessary conditions for deadlock to occur ? **8**

(b) Consider the following snapshot of system. The given jobs are of memory size 13 kB, 5 kB only.

Address	Size of Free space
005	2
070	28
105	12
279	82
395	15

Compare best fit, worst fit and first fit memory allocation schemes. Show the allocated addresses and free spaces after every job for all 3 schemes. **8**

OR

3 (a) Write and explain Bankers algorithm for deadlock avoidance ? **8**

(b) Explain difference between Internal and External fragmentation. **8**

UNIT - IV

4 (a) What do you understand by Belady's Anamoly ? Explain. **8**

(b) Consider 3 pages frames and following reference string use FIFO page replacement algo to calculate the number of page faults in each reference string is :

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1 **8**

OR

4 Explain the following :

(i) Demand Paging

(ii) Segmentation with Paging scheme

(iii) Thrashing

(iv) Global versus local allocation. **4×4=16**

UNIT - V

5 (a) Explain the classification of Allocation Methods. **8**

(b) Explain the concept of spooling with all its types and its advantage and disadvantage. **8**

OR

5 Suppose that a disk drive has 200 cylinders, numbered 0 to 199. The drive is initially at cylinder 53. The queue with request of I/O to blocks in cylinder 98, 183, 37, 122, 14, 124, 65, 67

Count the total head movement of cylinders in SCAN and C SCAN scheduling. **16**
