Daffodil International University

Department of Computer Science and Engineering
Faculty of Science and Information Technology
Final Examination, Semester: Fall - 2019
Course Title: Operating Systems
Course Code: CSE 323 Section: Day (All) Course Teacher: All

Time: 02 Hours | Full Marks: 40

Answer all the questions

1. a. Paging and segmentation both are two memory management schemes. What are differences between them? [4]

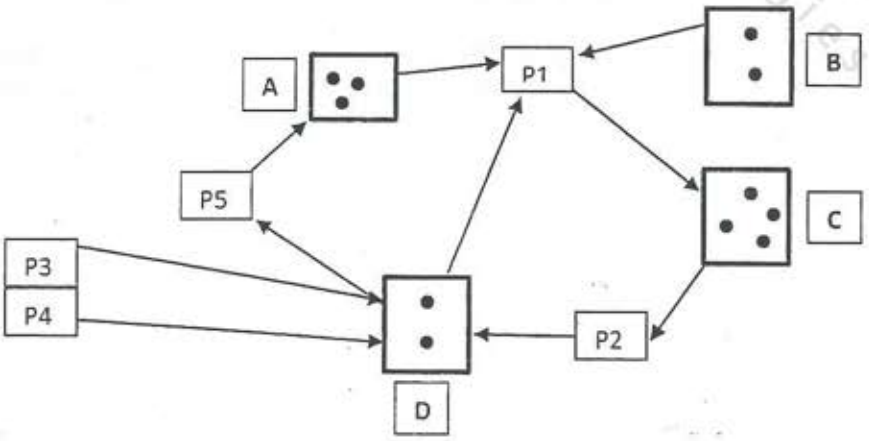
   b. Consider the following segment table.

Segment	Base	Limit
0	10024	48
1	24	35
2	96	300
3	1234	196
4	3002	222

What will be the physical address for the following offsets? [5]

I. 1, 22
II. 3, 96
III. 0, 48
IV. 4, 308
V. 2, 400

2. There are 5 processes [P1, P2, P3, P4, P5] and 4 resources [A, B, C, D]. Calculate the need matrix. Is the following scenario in safe state? Explain by a deadlock avoidance algorithm. If process P2 arrives with request (1, 0, 1, 0), can it be granted? [2+3+2]



3. a) Briefly describe the process termination system. [3]

   b) When a process is called orphan or zombie? [2]

4. Given memory partitions are 85K, 104K, 290K, and 50K (in order). How would Best and Worst Fit algorithm place each of the processes P1 to P8 given in the table? [7]

Process	Size (K)	Turnaround
P1	55	3
P2	98	3
P3	31	1
P4	7	2
P5	106	1
P6	100	3
P7	78	2
P8	50	1

5. Consider the following page reference string.

   9, 5, 0, 11, 23, 8, 11, 5, 20, 9, 23, 18, 8, 20, 4, 2, 5, 2

   How many page faults would occur for the following replacement algorithms, assuming 4 frames in the system? All frames are initially empty.
   Which algorithm works better here? [5+1]

   a. LRU replacement algorithm
   b. Optimal replacement algorithm

6. A disk drive has 1500 cylinders, numbered 0 to 1499. The drive is currently serving a request at cylinder 989, and the previous request was at cylinder 703. The queue of pending requests is,

   186, 39, 105, 88, 1355, 567, 23, 1008, 98, 309, 731, 610.

   Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests, for each of the following disk-scheduling algorithms? [6]

   a. C-LOOK
   b. SSTF