

5E5105

Roll No. _____

Total No of Pages: 3

5E5105

B. Tech V Sem. (Main/Back) Exam. Nov-Dec. 2015

Computer Science & Engineering

5CS5A Operating Systems

Common with IT

Time: 3 Hours

Maximum Marks: 80

Min. Passing Marks Main: 26

Min. Passing Marks Back: 24

Instructions to Candidates:

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.

1. NIL

2. NIL

UNIT-I

Q.1 (a) What is need of BIOS? Explain Boot strop loader also. [8]

(b) Is there any difference between kernel level and user level threads? Justify your answer. [8]

OR

Q.1 What are the benefits of threads? Explain context switching of processes and threads. [16]

UNIT-II

Q.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]

[5E5105]

Page 1 of 3

[6540]

OR

Q.2 Compose FCFS, SJF and Round-Robin scheduling algorithms by computing average waiting time. There are 5 processes with CPU burst time as 10, 5, 17, 25, 6 and arrival times are 0, 1, 0, 2, 7 units. Assume time quantum for Round Robin scheduling as 5 units. [16]

UNIT-III

Q.3 (a) What are the different deadlock prevention schemes? Explain. [8]
 (b) Compare best Fit, worst fit and first fit memory allocation schemes. The given jobs are of memory sizes 13KB, 5KB only. [8]

| Address | Size of free space |
|---------|--------------------|
| 005 | 2 |
| 070 | 28 |
| 105 | 12 |
| 279 | 82 |
| 395 | 15 |

Show the allocated addresses and free space table after every job for all 3 schemes.

OR

Q.3 (a) Write and explain Banker's algorithm for deadlock avoidance. [8]
 (b) There are 2 jobs of sizes 25 and 12 to be allocated memory. The free space table is - [8]

| Address | Size |
|---------|------|
| 005 | 02 |
| 009 | 17 |
| 210 | 89 |
| 383 | 13 |
| 490 | 11 |

Apply best fit, first fit and worst fit schemes and show allocated addresses and free space table after allocation.

UNIT-IV

- Q.4 (a) Is there any difference between pure paging and demand paging? Explain. [8]
- (b) Compute page fault ratio. The pages referenced are 7, 5, 2, 1, 7, 5, 4, 5, 1, 2, 5, and 7 (12pages). The job is allowed 3 blocks. Compare LRU & FIFO page replacement schemes. [8]

OR

- Q.4 (a) Compute number of page faults for LRU, FIFO and optimal page replacement algorithms. The given page trace is 7, 5, 1, 2, 7, 4, 5, 4, 5, 4, 5, 7 (12 pages). The job is allowed 3blocks in primary memory. [8]
- (b) What do you understand by Belady's Anomaly? Explain. [8]

UNIT-V

- Q.5 (a) Explain various features of file system of linux. [8]
- (b) Compare FCFS and SSTF disk scheduling algorithms. Initially the Read/Write Head is at 50. The requests are. 63, 52, 01, 93, 72, 13, 81, 54, (8requests). Compute total movement of R/W Head. [8]

OR

- Q.5 (a) Explain various file system features of windows operating system. [8]
- (b) Compare SCAN and C – SCAN disk scheduling algorithms. Read write Head is at 45. The requests are 63, 52, 01, 93, 72, 13, 81, and 54 (8 requests). Compute total movement of R/W Head. [8]