

C. U. SHAH UNIVERSITY

Winter Examination-2019

Subject Name: Operating System

Subject Code: 4TE04OPS1

Branch: B.Tech (CE)

Semester: 4

Date: 19/09/2019

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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Q-1 Attempt the following questions:

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|----|---|------|
| a) | What is throughput? | (01) |
| b) | What is the use of dispatcher? | (01) |
| c) | What is race condition? | (01) |
| d) | What is the difference between program and process? | (01) |
| e) | What is mutual exclusion? | (01) |
| f) | What is access matrix? | (01) |
| g) | What is spooling? | (01) |
| h) | What is fragmentation? | (01) |
| i) | What is the difference between hard real time operating system and soft real time operating system? | (01) |
| j) | List out various methods for file access. | (01) |
| k) | What is seek time? | (01) |
| l) | List out various types of resources. | (01) |
| m) | What is push migration? | (01) |
| n) | What is the use of dirty bit in paging? | (01) |

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions

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|-----|--|------|
| (a) | What is operating system? Explain various types of operating system. | (07) |
| (b) | Explain different states of a process with suitable diagram. | (07) |

Q-3 Attempt all questions

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|-----|--|------|
| (a) | Which are the scheduling algorithms result in starvation? Justify it with suitable example. | (07) |
| (b) | Explain the following allocations algorithms of memory management with suitable example: (i) First-fit (ii) Best-fit (iii) Worst-fit | (07) |

Q-4 Attempt all questions

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|-----|---|------|
| (a) | What is deadlock? Explain various conditions which leads to deadlock. | (07) |
| (b) | Explain the process of context switching in detail. | (07) |



- Q-5** **Attempt all questions**
- (a) Discuss the issues associated with paging and solution of it. (07)
- (b) Consider the following page reference string: (07)
1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6.
How many page fault occur for following page replacement algorithm
assuming frame size is 4. Also calculate hit ratio of given algorithms.
Given algorithms are: (1) FIFO (2) LRU and (3) Optimal.
- Q-6** **Attempt all questions**
- (a) The requested tracks are received in the order of: 95, 180, 34, 119, 11, (07)
123, 62, and 64. Current position of arm is at 50 and previous was 199.
There are 0 to 199 cylinders Apply the following disk scheduling
algorithms (1) FCFS (2) SCAN (3) C-LOOK and derive total head
movement for each algorithm.
- (b) Discuss about various types of scheduler with its applications. (07)
- Q-7** **Attempt all questions**
- (a) Do as directed: (07)
1) Write a short note on Process Control Block.
2) Explain RAID with its types.
- (b) Explain various security threats associated with operating system. (07)
- Q-8** **Attempt all questions**
- (a) Explain Segmentation with suitable example. (07)
- (b) What is file? What are the differences between file and directory? (07)
Explain various file attributes and file operations in brief.

