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## B.Tech III Year I Semester (R15) Supplementary Examinations June 2018

## **OPERATING SYSTEMS**

(Common to CSE & EIE)

Time: 3 hours Max. Marks: 70

## PART – A

(Compulsory Question)

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- 1 Answer the following:  $(10 \times 02 = 20 \text{ Marks})$
- (a) What is meant by system calls?
  - (b) What is meant by race condition?
  - (c) A counting semaphore was initialized to 10. Then 6 P (wait) operations and 4V (signal) operations were completed on this semaphore. Find the resulting value of the semaphore.
  - (d) What is meant by dispatcher?
  - (e) What is meant by swapping?
  - (f) What are the algorithms available for deadlock avoidance?
  - (g) What is meant by boot control block?
  - (h) What is meant by global replacement and local replacement?
  - (i) What is meant by device drivers?
  - (j) What is meant by SSTF scheduling?

## PART - B

(Answer all five units,  $5 \times 10 = 50 \text{ Marks}$ )

UNIT – I

2 Discuss in detail the various system calls.

OR

3 Explain in detail inter process communication.

UNIT -II

- 4 (a) What is multithreading? Explain the thread libraries in detail.
  - (b) Describe semaphores in detail.

**OR** 

Determine the average waiting time and average turnaround time for FCFS, SJF, non-preemptive priority and round robin scheduling algorithms for the given process, burst and priority given below.

| Process | Burst | Priority |
|---------|-------|----------|
| P1      | 8     | 4        |
| P2      | 6     | 1        |
| P3      | 1//   | 2        |
| P4      | 9     | 2        |
| P5      | 3     | 3        |

UNIT – III

6 Given page reference string with 4 frames:

11

1, 2, 3, 4, 2, 1, 5, 6, 2, 1, 2, 3, 7, 6, 3, 2, 1, 2, 3, 6

Compare the number of page faults for LRU, FIFO and optimal page replacement algorithm.

OR

7 Explain the Banker's algorithm for deadlock avoidance with an example.

(UNIT – IV)

8 Explain the features and functionality of RAID in detail.

OR

9 Describe free space management in file system implementation in detail.

[ UNIT - V ]

Describe the services provided by the kernel I/O subsystem in detail.

OR

Discuss program threats, system and network threats of operating system in detail.