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Total No. of Questions: 8]

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## IT-4003 (CBGS) B.E. IV Semester

Examination, May 2018

## Choice Based Grading System (CBGS) Operating System

Time: Three Hours

Maximum Marks: 70

Note: i) Attempt any five questions out of eight.

ii) All questions carry equal marks.

- 1. a) Explain why 'wait' and 'signal' operations on a semaphore should be executed automatically.
  - b) What are threads? What resources are used when a thread is created?
- With reference to the following set of processes, determine average waiting time and average turnaround time. Using the following scheduling algorithms:
  - Shortest Remaining Time first
  - ii) Priority based (Preemptive)

Process	Arrival time	CPU Burst	Priority
P <sub>1</sub>	0	24	5
P <sub>2</sub>	3	7	3
P <sub>3</sub>	5	6	2
P <sub>4</sub>	10	10	1

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3. Prove the Belady's Anomaly in FIFO page replacement algorithm, assuming that the number of Frames is increased from 3 to 4; For the page reference strings 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5

Assume all frames are empty initially.

- 4. a) What is the difference between non-preemptive and preemptive scheduling? Explain why it is not likely to use strict non-preemptive scheduling in a computer system?
  - b) Write Banker's Algorithm.
- 5. a) What is the cause of Thrashing? How does the system detect thrashing?
  - b) If the average page fault service time of 25ms and a memory access time of 100ns. Calculate the effective access time.
- 6. The request tracks in the order received are 55, 58, 39, 18, 90, 160, 150, 38, 98. Apply the following disk scheduling algorithms starting tracks at 100.
  - i) SSTF

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- ii) C-SCAN
- 7. a) Explain various file access methods.
  - b) Explain any one deadlock detection methods.
- 8. Write short notes on any four:
  - a) I-Node
  - b) TLB
  - c) System call
  - d) PCB
  - e) Demand paging

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