VIT®

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

CSE2005 – Operating Systems Laboratory

Fall semester 2020-2021

SET 1

Instructions:

Components (Marks)
Algorithm:10
Program1: 15
Program2:15
Output: 10

a. Aim, algorithm and output can be handwritten or typed (your choice).
b. The snapshot of code and output should be scanned.
c. *The filename should be your register number.
d. The scanned copy of the whole content is to be uploaded in VTOP before 11:45 AM. (The time of submission will be noted).

1. Implement Sleeping Barber's problem using semaphore (25)

Scenario: There is a barber shop which has one barber, one barber chair, and n chairs for waiting for customers if there are any to sit on the chair.

- If there is no customer, then the barber sleeps in his own chair.
- When a customer arrives, he has to wake up the barber.
- If there are many customers and the barber is cutting a customer's hair, then the remaining customers either wait if there are empty chairs in the waiting room or they leave if no chairs are empty.

2. **Write and execute a C program to implement Disk scheduling (SCAN) (25)**

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SET 2

Instructions:

Components (Marks)
Algorithm:10
Program1: 15
Program2:15
Output: 10

a. Aim, algorithm and output can be handwritten or typed (your choice).
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1. Implement Cigarette smoker's problem using semaphore (25)

Scenario: Assume a cigarette requires three ingredients to make and smoke: tobacco, paper, and matches. There are three smokers around a table, each of whom has an infinite supply of *one* of the three ingredients — one smoker has an infinite supply of tobacco, another has paper, and the third has matches.

There is also a non-smoking agent who enables the smokers to make their cigarettes by arbitrarily (non-deterministically) selecting two of the supplies to place on the table. The smoker who has the third supply should remove the two items from the table, using them (along with their own supply) to make a cigarette, which they

smoke for a while. Once the smoker has finished his cigarette, the agent places two new random items on the table. This process continues forever.

2. **Write and execute a C program to implement Disk scheduling (C-SCAN) (25)**

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SET 3

Instructions:

Components (Marks)
Algorithm:10
Program1: 15
Program2:15
Output: 10

a. Aim, algorithm and output can be handwritten or typed (your choice).
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c. *The filename should be your register number.
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1. Implement Thirsty problem using semaphore (25)

Scenario: To drink, a thirsty person must have three things; water, ice and a glass. There are three thirsty people, each having a different one (and only one) of the three required items. A fourth person, a server has unlimited supply of all three items. If nobody is drinking, the server places two of the three items (chosen at random) onto table. Thirsty person who can make a drink from those two items will pick them up and drink a glass of ice water. When done, thirsty person will notify the server and the process will repeat.

2. Write and execute a C program to implement Disk scheduling (C-LOOK) (25)