Candidate seat No: _____

Charotar University of Science and Technology
Devang Patel Institute of Advance Technology and Research
Department of Computer Science Engineering
Subject: CSE350 Operating System

Semester: 5th (B. Tech.) **Maximum Marks: 70**
Date: 23/11/2021, Tuesday **Time: 10:00 am to 01:00 pm**

Instructions:
(i) Attempt ***all*** the questions.
(ii) Figures to the right indicate ***full*** marks.
(iii) Make suitable assumptions and draw neat figures wherever required.

Section: 1

Sr. No	Questions	Marks	CO	BL
1	What is the unmounting process in a file system? a. Detaching a disk drive b. Detaching internal fragments created in memory c. Detaching a external fragments d. None	1	1	R
2	File metadata is used to manage what? a. Mapping of file b. Virtual memory c. Physical Memory d. None	1	1	R
3	Spool buffer holds which data? a. Output of program b. Output of a device c. Output of a thread d. None	1	2	R
4	I/O hardware contains a. Registers b. Virtual memory c. Controller d. A and C both	1	1	R
5	In the concept of paging due to Page table size and frame size which of the following technique is adapted? a. Inverted paging b. Two level paging c. Segmented paging d. None	1	1	A

Best of Luck

Candidate seat No: _____

6	A process stack contains? a. Function parameters b. Local variables c. Return addresse d. All of the options	1	1	R
7	Consider two process "A" and "B" which needs to be synchronized. Process "A" throws signal to wake and then process "B" sends sleep signal to a device "W". Now, these processes simultaneously signal to the device. Which of the following is the best suitable synchronization solution? a. Semaphore b. Strict Alteration c. Lock Variable d. No synchronization required	2	3	UA
8	Consider two process "A" and "B" which needs to be synchronized. Process "A" throws signal to wake and then process "B" sends sleep signal to a device "W". Now, these processes may or may not signal simultaneously to the device. Which of the following is the best suitable synchronization solution? a. Semaphore b. Strict Alteration c. Lock Variable d. No synchronization required	2	3	UA
9	Consider the SRTF algorithm. The Arrival time of processes P1, P2, P3, and P4 is 0 , 1, 2, and 3 respectively as well as burst times 8,4,2, and 1 . Which process has a minimum waiting time? a. P1 b. P2 c. P3 d. P4	2	2	A
10	Which of the following will suffer a major convoy effect? Hint: MAJOR a. 1, 2,3,5,44, 25,3 b. 1,2,44,3,4,44 c. 44,1,25,2,1,1, d. None	2	1,2	A,R
11	A system is having 4 user processes each requiring 2 units of resource R. The maximum number of units of R such that ensures deadlock will occur- a. 3 b. 4 c. 5 d. 6	2	3	A
12	A computer created the following page addresses in the following order:1 2 3 4 1 3 5 2 1 5 4 3 2 3 1 5 4 3 2 3This software runs on a demand-paged virtual memory system with 5 pages of main memory. For the LRU page replacement technique, indicate the page references for which page faults occur. a. 8	2	3	A,R

Best of Luck

Candidate seat No: _____

	b. 15 c. 10 d. 7			
13	For page reference Seq: " 3 5 2 1 5 4 4 3 2 3 1 2 3 4 1 3 2 3 1 5" what will be number of hits if frame size is 5. a. 15 b. 16 c. 10 d. 3	2	2	A

Best of Luck

Candidate seat No: _____

Section : 2

ATTEMPT ANY 10

Sr. No	Questions	Marks	CO	BL
1	Define Operating system and elaborate five types of OS.	5	1	R
2	In producer-consumer problem suppose stack size 8 and it contains 4 items inside it. In this scenario explain the solution to the producer-consumer problem using semaphore.	5	1	A,R
3	In Dining Philosopher Problem consider 3 philosophers and 3 forks and explain the solution to this problem using semaphore.	5	1	A,U
4	Explain the Bankers algorithm and how it can be used to avoid deadlock for the below condition where available X, Y, Z are 3,1,2.	5	2	U
5	In a system we have a logical address space of 8 GB and RAM of 128 MB. Which page size out of 64 KB, 4 MB, and 64 MB is not suitable for the normal paging technique and why? Consider that we are working in the byte-addressable environment.	5	2	A,U
6	Explain the Most optimal and LRU page replacement algorithms using below page sequence. 2,3,4,1,1,2,4,3,1,1,5,6,7,6,4,3,2,1	5	3	R,U
7	Explain SSTF disk scheduling algorithm for order request :-(820,1700,430,1400,240,160,1900) where head is at 490	5	3	U
8	Explain I/O Devices, Device Controllers, and Direct Memory Access in detail.	5	2	R
9	Differentiate contiguous allocation and linked list allocation in file system.	5	3	R,U
10	Provide definition of Inode, Buffer cache, ialloc ,namei ,and ifree.	5	1,3	R,U
11	In a system we have a logical address space of 8 GB and RAM of 128 MB. Consider that we are working in the byte-addressable environment. Justify why 70 MB is not a suitable page size.	5	2,3	A

Note:
CO – Course Outcomes
BL – Bloom's Taxonomy Level

Best of Luck