LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.C.A.& Bsc. DEGREE EXAMINATION – **COMPUTER SCIENCE & APPLI.**

SECOND SEMESTER – **APRIL 2022**

UCS 2503/UCA 2501 – OPERATING SYSTEM

(21 BATCH ONLY)

Date: 16-06-2022 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

	SECTION A		
Answer ALL the Questions			
1.	**Define the following**	**(5 x 1 = 5)**	
a	Context switch	K1	CO1
b	Semaphores	K1	CO1
c	Safe state	K1	CO1
d	Compaction	K1	CO1
e	Page fault	K1	CO1
2.	**Choose the best answer**	**(5x1=5)**	
a)	The primary purpose of an operating system is i. To make the most efficient use of computer hardware. ii. To allow the people to use the computer iii. To keep systems programmers employed iv. To make computers easier to use.	K1	CO1
b)	Where are placed the list of processes that are prepared to be executed and waiting? i. Job queue ii. Ready queue. iii. Execution queue iv. Process queue	K1	CO1
c)	The banker's algorithm is used i. To rectify deadlock ii. To detect deadlock iii. To prevent deadlock. iv. To solve deadlock	K1	CO1
d)	Which one of the following is the address generated by CPU? i. physical address ii. absolute address iii. logical address iv. Frame offset	K1	CO1
e)	The heads of the magnetic disk are attached to a _____ that moves all the heads as a unit. i. spindle ii. disk arm iii. track iv. none of the mentioned	K1	CO1
3.	**Fill in the blanks**	**(5 x 1 = 5)**	
a)	The number of processes completed per unit time is known as _____	K2	CO1
b)	Max resource- Allocation resource =----------	K2	CO1
c)	Belady's anomaly may occur in ----------page replacement algorithm,	K2	CO1

d)	Allocate the smallest hole that is big enough is —--------	K2	CO1
e)	The user who created the file is the —------	K2	CO1
4.	**State TRUE or FALSE** **(5 x 1 = 5)**		
a)	Virtual memory space is always smaller than physical memory space.	K2	CO1
b)	Usually, there's one I/O queue for the system	K2	CO1
c)	A segmented memory model is good for separating code from data	K2	CO1
d)	The scheduler is the part of an operating system that determines the priority of each process	K2	CO1
e)	A context switch can occur only after processing a timer interrupt, but not after any other system call or interrupt.	K2	CO1

SECTION B

Answer any TWO of the following in 100 words **(2 x 10 = 20)**

5.	Explain the five major activities of an operating system with regard to process management.	K3	CO2
6.	Illustrate critical section problem and the requirements for a solution to the critical problem	K3	CO2
7.	Explain the fragmentation with its types.	K3	CO2
8.	Write the Bankers algorithm for i.Safety algorithm ii. Resource request algorithm.	K3	CO2

SECTION C

Answer any TWO of the following in 100 words **(2 x 10 = 20)**

9.	Analyse the different operations on process and cooperating process.	K4	CO3
10.	Explain Deadlocks and necessary conditions for Deadlocks.	K4	CO3
11.	Criticize any three page replacement algorithm with its advantages.	K4	CO3
12.	Explain the procedure for handling the page fault with neat diagram.	K4	CO3

SECTION D

Answer any ONE of the following in 250 words **(1 x 20 = 20)**

13.	Consider the following set of processes, with the length of the CPU burst given in milliseconds: Process / Burst time / Priority P1 / 10 / 3 P2 / 1 / 1 P3 / 2 / 3 P4 / 1 / 4 P5 / 5 / 2 Evaluate the average turnaround time and average waiting time for FCFS, SJF and Priority scheduling algorithms.	K5	CO4
14.	Consider a disk request queue on cylinder 82,170,43,140,24,16,190 and the current position is 50. Evaluate the total seek time for the FCFS, SSTF, SCAN, C-SCAN algorithms	K5	CO4

SECTION E

Answer any ONE of the following in 250 words **(1 x 20 = 20)**

15.	Report the fundamental models of inter process communication	K6	CO5
16.	Compile different disk allocation techniques with neat diagram.	K6	CO5

@@@@@@@