WALCHAND COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)
Vishrambag, Sangli – 416415

Second Year B.Tech. Computer Science and Engineering
ESE , EVEN SEMESTER, AY 2022-23
Operating Systems (6CS222)

ESE

PRN: _____

Day & Date: Saturday, 13/05/2023 Time : 10.00 am to 12.00 noon

Max Marks: **50**

IMP: Verify that you have received question papers with correct course code, branch etc.

Instructions
a) All questions are compulsory.
b) Writing question number on answer book is compulsory otherwise answers may not be assessed.
c) Assume suitable data wherever necessary.
d) Figures to the right of question text indicate full marks.
e) Mobile phones, smart gadgets and programmable calculators are strictly prohibited.
f) Except PRN anything else writing on question paper is not allowed.
g) Exchange/Sharing of stationery, calculator etc. not allowed.

Text on the right of marks indicates course outcomes (Only for faculty use)

			Marks	
Q1	A)	What are **System calls** in OS? How they are implemented? Enlist and brief about System Call types.	5	CO1
	B)	What different types of **Editors** are mentioned in System Programs? Enlist and brief about each of them.	5	CO1
Q2	A)	Implement **Round Robin** Scheduling algorithm and Calculate response time, waiting time of following each processes and average waiting time for time quantum of 2 ms.	5	CO2

Processes	CPU burst time (ms)
P1	5
P2	3
P3	1
P4	2
P5	3

	B)	Describe '**Producer-Consumer problem**' mentioned in Process synchronization. What is 'Race Condition'? Illustrate with a suitable example.	5	CO2
Q3	A)	In Inter-Process Communication, what do you mean by **Critical-section problem**. Which three conditions that must be fulfilled in providing the solution to solve this problem? Describe Peterson's algorithm as a solution.	5	CO2
	B)	What is **Deadlock**? When deadlock can arise (characterizations)? Also mention any of the Deadlock **avoidance** algorithm with its working.	5	CO3
Q4	A)	With the help of diagram elaborate on **Swapping** technique used in Memory management. Also mention contiguous allocation strategies such as **First-fit, Best-fit** and **Worst-fit**. What is **fragmentation** of memory problem?	5	CO3

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B) Write note on any two of the following.

Paging **Demand Paging** **Segmentation**

Q5 A) Find total Page-faults and Page-hits for the given reference string 1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6 for three frames per process using FIFO, Optimal and LRU algorithms respectively of **Page Replacement** techniques.

B) Describe the concepts File attributes, File operations, File types and File access methods related to **File management** with suitable examples.

..... End of question paper .....