WALCHAND COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)

Vishrambag, Sangli - 416415

Second Year B.Tech. (Computer Science and Engineering)

RE-EXAMINATION (EVEN SEM AY 2021-22) SEPTEMBER - 2022

Operating Systems (5CS223)

Re-Exam

Day, Date and Time: Monday, 12/09/2022, 10.30 am to 01.30 pm PRN: _____

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

Max Marks: 100

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 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)	Write short note on Batch, Multi-programming, Multi-processing, Real-time & Distributed Operating Systems. Also brief their differences comparatively.	6	CO1
Q1 B)	With diagram mention various services those are provided by operating system for users. Enlist and brief the importance to users.	6	CO1
Q1 C)	What is the use of system calls in OS design? Enlist types of system calls implemented by OS and mention details of each with examples (Windows/Unix).	6	CO2
Q2 A)	For execution of a program which System Programs in sequence are essential? Briefly mention their working.	6	CO1
Q2 B)	What is a two-pass assembler? Give reason for two passes required in this scheme.	6	CO2
Q2 C)	What are Software Tools used for? Mention such tools and their purpose. Also enlist type of Editors.	6	CO1
Q3 A)	Which different states are associated with a process? With diagram explain their state transition details.	6	CO3
Q3 B)	Which 3 queues are utilized by process scheduler for process scheduling? Mention their working with process scheduling representation diagram.	6	CO2
Q3 C)	Implement Round Robin Scheduling algorithm and Calculate response time of following each processes for time quantum of 4ms.	6	CO3

Processes	CPU burst time (ms)
P1	25
P2	3
P3	3

Q4 A)	Explain the Critical-Section problem with the three conditions which must be fulfilled. What is the Peterson's solution (algorithm) for two cooperating processes solution?	6	CO3
Q4 B)	Enlist the classical problems of synchronisation. Elaborate on any one problem in detail.	6	CO2
Q4 C)	Explain the Deadlock problem in process synchronization with example? Also briefly mention on which methods can be used for deadlock prevention.	6	CO3

Q5 A) Explain First fit, Best fit & Worst fit dynamic contiguous memory allocation methods with example. Also note on internal & external fragmentation. 6

Q5 B) b Write short note on following. 6
Segmentation Virtual Memory

Q5 C) For given Page reference string 3 1 2 3 4 2 3 0 3 1 3 illustrate how many Page Fault and Page Hit would occur using FIFO and LRU Page Replacement Virtual memory management algorithm assuming 3 frames available. 6

Q6 A) Write short note on File attributes, File operations, File types, File access methods concepts of File management. Also discuss in-memory File system structures and a typical File control block used in File implementation. 5

Q6 B) Which four level security measures are essential to protect system? Also brief on program, system and network security threats. 5