WALCHAND COLLEGE OF ENGINEERING, SANGLI.

(An Autonomous Institute)

ESE

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

END SEMESTER EXAMINATION: SEMESTER-II MAY-2019

OPERATING SYSTEM (3CS223)

Exam Seat Number: _____

Day, Date and Time: Thursday, 09/05/2019, 10.30am to 12.30pm

Max Marks: **50**

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

Instructions: i) All questions are compulsory. Writing question number is compulsory. The answers may not be assessed if question number is not written. Assume suitable data wherever necessary.
ii) Figures to the right of question text indicate full marks.
iii) Mobile phones and programmable calculators are strictly prohibited.
iv) Except Exam Seat Number writing anything on question paper is not allowed.
Exchange/Sharing of stationery, calculator etc. not allowed.

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

		Marks	
Q1 A)	Comparatively note on Batch, Multi-programming, Multi-processing, Real-time & Distributed Operating Systems.	5	CO1
Q1 B)	Draw and illustrate **Multi-level Queue with Feedback** scheme with three queues(Q0 with quantum 16 ms using RR, Q1 with quantum 8 ms using RR and Q3 implemented using FCFS) to solve the aging problem in CPU process scheduling.	5	CO4
Q2 A)	What is **Race condition & Critical-section problem** arises in Producer-Consumer based process synchronization? Which three conditions must be fulfilled in providing the solution to solve this problem?	5	CO4
Q2 B)	What is Deadlock situation in process synchronization? Explain **Banker's algorithm** for Deadlock avoidance with details of data structures used in it.	5	CO4
Q3 A)	Discuss First fit, Best fit & Worst fit dynamic contiguous memory allocation methods with example. Draw implementation of Page table used in **Paging** scheme indicating logical and physical memory. Also differentiate between **Paging** and **Segmentation** of main memory techniques.	7	CO2
Q3 B)	Explore the concept of **Demand Paging** scheme used in virtual memory. 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.	8	CO2
Q4 A)	Explain 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**.	8	CO3
Q4 B)	Draw **kernel I/O subsystem structure** and explore I/O scheduling, Buffering, Caching services provided by kernel to I/O subsystem. Also mention the benefits of each service. -OR- Which four level **security measures** are essential to protect system? Also brief on program, system and network **security threats**.	7	CO3