BCE-C407
OPERATING SYSTEM

MM: 100 **Sessional: 30**
Time: 3 hrs **ESE: 70**
L T P **Credits 3**
3 1 0

NOTE: The question paper shall consist of three sections (Sec.-A, Sec.-B and Sec.-C). Sec.-A shall contain 10 objective type questions of one mark each and student shall be required to attempt all questions. Sec.-B shall contain 10 short answer type questions of four marks each and student shall be required to attempt any five questions. Sec.-C shall contain 8 descriptive type questions of ten marks each and student shall be required to attempt any four questions. Questions shall be uniformly distributed from the entire syllabus. The previous year paper/model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: Operating System, Single Processor systems, Multiprocessor Systems, Clustered Systems, Mainframe Systems, Desktop Systems, Distributed Systems, Real Time Systems, System Components, Handheld Systems, Operating System Services, System Calls, System Programs, System Structure, Operating System Design and Implementation.

UNIT II

Process Management: Process Concept, Process Scheduling, Cooperating Processes, Inter-process Communication, Threads, Overview of Multithreading Models, CPU Scheduling, Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling, Real Time Scheduling, Algorithm Evaluation.

UNIT III

Process Synchronization & Deadlocks: The Critical Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Deadlocks, System Model, Deadlock Characterization, Methods for handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

UNIT IV

Memory Management & Virtual Memory: Background, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Virtual Memory, Demand paging, Page Replacement, Thrashing, Allocation of Frames

UNIT V

File System & Secondary Storage Structure: File Concepts, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure, File System Implementation, Directory Implementation, Allocation Methods, Free Space Management, Recovery, Disk Structure, Disk Scheduling, Disk Management, Swap Space management.

Text Books / References

1 Silberschatz, Galvin, Gagane, Operating System Concepts. Wiley India Edition.
2 William Stallings, Operating System, Pearson Prentice Hall.
3 D.M.Dhamdhere, Operating Systems, TMH.