

Paper Code: BCA-301

L	T/P	C
3	1	4

Paper: Operating System

Pre-requisite: None

Aim: To introduce an operation System and describe the functionalities of Operating System.

Objectives

- To Understand the services provided by an operating system.

INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks : 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks

UNIT – I

Introduction: What is an Operating System, Simple Batch Systems, Multiprogrammed Batches systems, Time-Sharing Systems, Personal-computer systems, Parallel systems, Distributed Systems, Real-Time Systems

Memory Management: Background, Logical versus Physical Address space, swapping, Contiguous allocation, Paging, Segmentation

Virtual Memory: Demand Paging, Page Replacement, Page-replacement Algorithms, Performance of Demand Paging, Allocation of Frames, Thrashing, Other Considerations

[No. of Hrs.: 12]

UNIT – II

Processes: Process Concept, Process Scheduling, Operation on Processes

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling,

Process Synchronization: Background, The Critical-Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization

[No. of Hrs.: 10]

UNIT – III

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock

Device Management: Techniques for Device Management, Dedicated Devices, Shared Devices, Virtual Devices; Input or Output Devices, Storage Devices, Buffering, Secondary-Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management, Disk Reliability

[No. of Hrs.: 10]

Note : A Minimum of 40 Lectures is mandatory for each course.

Syllabus of Bachelor of Computer Applications (BCA), approved by BCA Coordination Committee on 26th July 2011 & Sub-Committee Academic Council held 28th July 2011, W.e.f. academic session 2011-12

UNIT – IV

Information Management: Introduction, A Simple File System, General Model of a File System, Types of File System File-System Interface: File Concept, Access Methods, Directory Structure, Protection: Goals of protection, Domain of protection, Access rights, Consistency Semantics Security: Authentication, Program threats, System threats, Encryption.

[No. of Hrs.: 12]

TEXT:

[T1] Silberschatz and Galvin, "Operating System Concepts", John Wiley & Sons, 7th Ed. 2005

[T2] Haldar/Aravind, "Operating System", Pearson Edu.

REFERENCES:

[R1] Madnick E., Donovan J., "Operating Systems", Tata McGraw Hill, 2001

[R2] Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000

[R3] An Introduction to Operating Systems: Concepts & Practice, Bhatt, PHI