PAPER I I: Operating System

Maximum Marks: 50   **External: 40**
Minimum Pass Marks: 18   **Internal: 10**
Time: 3 hours
Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/ short -answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. A candidate will be required to answer five questions in all, selecting one question from each unit in addition to compulsory Question No. 1. All questions will carry equal marks.

UNIT – I
Introduction: operating system, architecture, functions, characteristics, historical evolution, types: Serial batch, multiprogramming, time sharing, real time, distributed and parallel. OS as resource Manager.
Computer system structures: I/O structure, storage structure, storage hierarchy.
Operating system structure: system components, services, system calls, system programs, system structures.

UNIT – II
Process management: process concepts, process state, process control block, operations, process scheduling, inter process communication.
CPU Scheduling: scheduling criteria, levels of scheduling, scheduling algorithms, multiple processor scheduling. Deadlocks: Characterization, methods of handling, deadlock detection, prevention, avoidance, recovery.

UNIT – III
Storage Management: memory management of single-user and multiuser operating system, partitioning, swapping, paging and segmentation, virtual memory, Page replacement Algorithms, Thrashing.
Process synchronization: critical section problems, semaphores. Mutual exclusion

UNIT – IV
Device and file management: Disk scheduling, Disk structure, D isk management, File Systems: Functions of the system, File access and allocation methods, Directory Systems: Structured Organizations, directory and file protection mechanisms.

TEXT BOOKS:
1. Silberschatz A., Galvin P.B.,and Gagne G., "Operating System Concepts", John Wiley & Sons, Inc.,New York.
2. Godbole, A.S., "Operating Systems", Tata McGraw -Hill Publishing Company, New Delhi.

REFERENCE BOOKS:
1. Deitel, H.M., "Operating Systems", Addison - Wesley Publishing Company, New York.
2. Tanenbaum, A.S., "Operating System- Design and Implementation", Prentice Hall of India, New Delhi.