Paper
PAPER CODE BCA – 401
Numerical Methods

Max. Marks: External 80 + Internal 20

Unit – I Computer Arithmetic, Floating point number operations, Normalization and their consequences, Emphasis on computational Algorithms, Iterative methods, Zeros of a single transcendental equation and zeros of polynomials using Bisection, False position, Newton- Raphson and Secant methods, convergence of solutions.

Unit – II Simultaneous linear equations, Solution of simultaneous linear equations, Gauss elimination method with pivoting, Gauss – Jordan method, Jacobi's iteration method and Gauss – Seidel iteration method, Ill-conditioned equations and refinement of solutions.

Unit – III Difference Operators and Interpolation: Definition of Forward, Backward, Shifting, Divided difference, Central and Averaging Operators and their relationships, Newton's forward difference, backward difference and divided difference interpolation formulae, Lagrange's Interpolation formula.
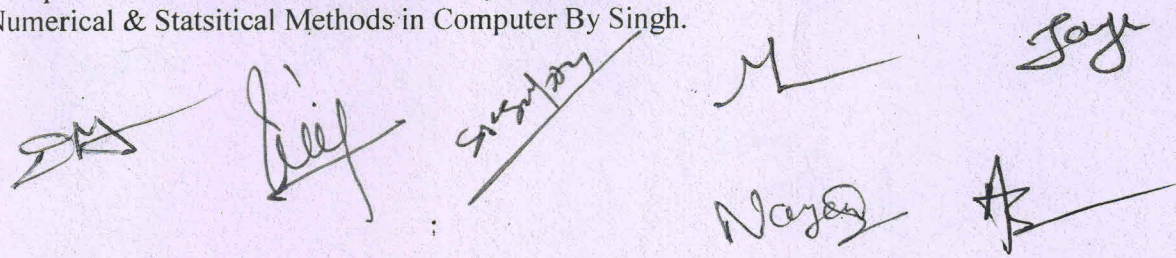
Unit – IV Numerical Differentiation and Integration:
Numerical Differentiation using Newton's forward difference, backward difference and divided difference interpolation formulae, General Quadrature formula, Newton Cote's integration, Trapezoidal rule, Simpson's one – third and three – eight rules.

Unit – V Numerical Solution of Ordinary Differential equations by Euler's Method, Modified Euler's method, Taylor's series method, Picard's method, Runge Kutta, second order and fourth order methods, Predictor-corrector methods.

Recommended Books:
1. Computer Oriented Numerical Methods by V.Rajaraman. .
2. Numerical Analysis by S.S.Sastry.
3. Numerical Algorithms by E.V.Krishnamurthy
4. Numerical Methods by B.S.Grewal.
5. Numerical Methods for Scientific & Engg. Computer by Jain & Iyenger.
6. Numerical Method by Bala Guru Swamy .
7. Computer oriented Numerical Method by Salaria.
8. Numerical & Statsitical Methods in Computer By Singh.

PAPER CODE BCA - 402
Advanced Computer Architecture

Max. Marks: External 80 + Internal 20

UNIT 1-Structure and Function, Computer Interconnection Structure, The computer system, system buses, computer function, fetch and execution cycle, interrupts, multiple interrupts by interconnection and bus design , PCI bus .

UNIT 2-COMPUTER MEMORY SYSTEM, AND THEIR CHARACTERISTICS, SEMI CONDUCTOR / MAIN MEMORY , CHIP PACKAGING ERROR CORRECTION , CACHE MEMORY AND IT'S MAPPING .

UNIT 3-External memory - magnetic disk organization, RAID, Optical memory, CD- ROM, VROM magnetic tape .

UNIT 4-INPUT/OUTPUT EXTERNAL DEVICES, I/O MODULE PROGRAMMED I/O AND INTERRUPT DRIVER, I/O INTERRUPT CONTROLLER.

UNIT 5- programmable peripheral interface, DMA I/O channels and external interface.
 ASSEMBLY LANGUAGE PROGRAMMING: DETAILED STUDY OF 8086/8088 ASSEMBLY LANGUAGE

INSTRUCTION SET, LOOPS AND COMPARISONS, CONDITION AND PROCEDURE, ARITHMETIC OPERATOR ASSEMBLY

LANGUAGE, ILLUSTRATIONS USING TYPICAL PROGRAMS LIKE : TABLE SEARCH, SUBROUTINES, SYMBOLIC AND

NUMERICAL MANIPULATIONS AND I/O

Reference:

1. COMPUTER ORGANISATION AND ARCHITECTURE - STALLING WILLIAMS - PHI
2. MANO, M.M. - COMPUTER SUSTEM ARCHITECTURE, PRENTICE HALL OF INDIA

Accounting & Management Control

Max. Marks: External 80 + Internal 20

UNIT-I Meaning of Financial Accounts, Important concepts of Accounts, types of accounts, Rules of Journal, Simple journal entries, , Cash Book – Types, Format of Cash book, Balancing of Cash Book, Ledger, posting of entries.

UNIT – II TRIAL BALANCE, ADJUSTMENT ENTRIES RELATING TO CLOSING STOCK, OUTSTANDING EXPENSES, PREPAID EXPENSES, ACCRUED INCOME, UNEARNED INCOME, DEPRECIATION AND INTERESTS ON CAPITAL., SIMPLE FINAL ACCOUNTS WITH THE ABOVE ADJUSTMENTS.

UNIT – III Meaning and need of material control, purchasing of materials, inspection of materials, FIFO and LIFO methods of outgoing material, their advantages and limitations.

UNIT – IV PAY MASTER'S DEPARTMENT, PAY ROLL ACCOUNTING , METHODS OF PAYMENTS OF WAGES, OVERVIEW OF COMPUTERIZED METHOD FOR PAYROLL PREPARATION.

UNIT – V Meaning and scope of financial management , functions of finance , Objectives of financial management , Mathematics of finance : present value techniques, fund from operations, importance & usefulness of statement .

TEXT & REFERENCE BOOKS
1. Book Keeping by Grewal T.S.
2. Cost Accounting by S.K. Maheshwari

Paper V
PAPER CODE BCA - 405
Introduction to Operating System

Max. Marks: External 80 + Internal 20

UNIT 1-Computer system overview, Basic elements , functions and types of operating system Serial Processing , Batch System, multi- programmed , Batch System, Time sharing systems., System components, Operating system Services, System Calls, Processor registers, Instruction execution, Interrupts, Interrupt processing.

UNIT 2- Memory hierarchy, Cache memory, I/O Communication techniques , Concept of Process, Memory management, Information Protection, Scheduling and Resource Management Structure , Process description, Process state, Two state process model, Creation and termination of processes, Five state model, Suspended process, Process description, Process attributes

UNIT 3-. Semaphores, Classical Problem Of Synchronization, Monitors, Atomic Transactions, System Model, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined approach to Deadlock.

UNIT 4-. PROCESS CONCEPTS, PROCESS STATE & PROCESS CONTROL BLOCK, PROCESS SCHEDULING, SCHEDULING, CRITERIA, SCHEDULING ALGORITHMS, MULTIPLE- PROCESSOR SCHEDULING REAL-TIME SCHEDULING, CRITICAL SECTION Problem.

UNIT 5-Loading programs, Fixed portioning, dynamic portioning, Relocation, simple paging, Simple segmentation, Loading and Linking.Paging, Segmentation, Segmentation With Paging, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms

Reference :
***OPERATING SYSTEM CONCEPTS** - SILBERSCHATZ & GALVIN,ADDISON WESLEY PUBLICATION*
Operating System - W. Stallings, Second Edition, Prentice Hall of India

18/10/21