

# Computer Application

S.E. Sem. III [CHEM]

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## EVALUATION SYSTEM

	Time	Marks
Theory Exam	3 Hrs	100
Practical Exam	–	25
Oral Exam	–	–
Term Work	–	25

## SYLLABUS

### 1. Introduction

- Software Evolution, Algorithm, Flowchart, Approaches to Modular Design, Software Development Life Cycle and Object Oriented Paradigm.
- Opening and Closing Data Files (File Access Options), Creating a Data File and Accessing a Data File.

### 2. Basic Concepts in Data Base Management Systems (DBMS)

- Database System Application, File Structure Versus DBMS, Database Languages, Database user and administrator, E-R Diagrams and Reduction of E-R to the Relational scheme.
- **Introduction to Visual Programming** : Case study in Visual Basic : Form Designing by active Data Object (ADO), Open Database Connectivity (ODBC) with Excel and Application to the Chemical Engineering Problem.

### 3. Introduction to MATLAB

- Introduction; Tutorial Lessons : A minimum MATLAB Session, Creating and working with Arrays of numbers, creating and printing simple plots, Creating, Saving and Executing a script file, Creating and executing a function file, Working with files and directories and Publishing reports. Interactive Computations : Matrices and Vectors, Matrix and Array Operations, Vectorization, Command line functions, Using built-in functions and on-line help, Saving and loading data and Plotting simple graphs; Programming in MATLAB : Scripts and Functions; Applications; Graphics; 2-D and 3-D plots.

### 4. Introduction to Robotics

- Automation, Specification of Robot NC and CNC Machine, Advantages, Disadvantages, Basic Concepts of Artificial Intelligence, Expert System and its applications to Chemical Engineering.

### 5. Numerical Methods

- Solution of Algebraic and Transcendental Equations, Bisection Method, Method of False Position, Iteration Method, Secant Method, Newton Raphson Method, Muller's Method, The Quotient Difference Method and Solution of Systems Non-linear Method.

### 6. Interpolation

- Error in Polynomial Interpolation, Finite Differences, detection of Errors by use of Difference Tables, Newton's Formula for interpolation, Central Difference Interpolation Formula, Practical Interpolation, Interpolation with Unevenly spaced points, Divided Differences and their properties, Inverse Interpolation and Double Interpolation.
  - **Curve Fitting, Cubic Splines and Approximation** : Least Squares Curve Fitting Procedures, Data Fitting with Cubic Splines, Approximation of Functions.
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**Reference :**

1. Electrical Machines (*I.J.Nagrath, D.P. Kothari*) – Tata McGraw Hill, 2nd edition, New Delhi, 1997.
2. Fundamental of Electrical Engineering (*Bobrow, Leonard S.*), Oxford University Press, New Delhi, 2003.
3. Electrical Machinery (*Dr. P. S. Bhimbra*) – 5th edition, Khanna Publisher, New Delhi, 1997.
4. The performance and Design of Alternating Current Machines (*M. G. Say*) – 3rd edition, CBS Publisher and Distributor, Delhi, 1983.
5. FHP Mototors (*Openshaw Taylor*) – Addison Wesley, 1976.
6. Electronics Devices and Circuits (*J. Millman & C. C. Halkias*) – Tata McGraw Hill, 1994.
7. Electric Machinery and Transformers (*Bhang S. Guru & Huseyin R. Hiziroglu*) – Oxford University Press, New Delhi, 2000.
8. Electronic Devices and Circuits and Introduction (*A. Mattershead*) – Prentice Hall of India, 1993.
9. Switchgear and protection (*Sunil S. Rao*) – 9<sup>th</sup> edition, Khanna Publishers, Delhi, 1988.
10. Electrical Power (*S. L. Uppal*) – 13<sup>th</sup> edition, Khanna Publishers, Delhi, 1988.

