

## **PROBABILITY**

History, Repeated experiments and observed frequency approach to probability. empirical probability. Classical definition of probability. Random experiments: outcomes, sample spaces (set representation). Events: occurrence of events, 'not', 'and' and 'or' events, exhaustive events, mutually exclusive events Axiomatic (set theoretic) probability. Probability of an event, probability of 'not', 'and' & 'or' events. Multiplication theorem on probability. Conditional probability, independent events, total probability, Baye's theorem, Random variable and its probability distribution, mean and variance of haphazard variable. Repeated independent (Bernoulli) trials and Binomial distribution.

## **STATISTICS**

Introduction to Statistics : Collection of data, presentation of data — tabular form, ungrouped and grouped, bar graphs, histograms (with varying base lengths), frequency polygons, qualitative analysis of data to choose the correct form of presentation for the collected data. Mean, median, mode of grouped and ungrouped data. Cumulative frequency graph.

Measure of dispersion; mean deviation, variance and standard deviation of ungrouped and grouped data. Analysis of frequency distributions with equal means but different variances.

## **PERMUTATIONS & COMBINATIONS:**

Fundamental principle of counting. Factorial  $n.(n!)$  Permutations and combinations, derivation of formulae and their connections, simple applications.

## **BINOMIAL THEOREM:**

History, statement and proof of the binomial theorem for positive integral indices. Pascal's triangle, General and middle term in binomial expansion, simple applications.

## Fundamental of Computers Syllabus

**Unit 1: Basic Concepts :** Introduction to Computers, Classification and Generations of computers; Block Diagram of Computer, Hardware, Software, Firmware, Input devices, Memory and Storage Devices, Central Processing Unit, Output devices and Computer Ports, Software: System software and Application Software, Concept of Algorithm and Flowchart, Generations of Programming Languages.

**Unit 2: Operating System**

Concept of Operating System, Operating System : Open and Proprietary, Versions of Windows, Features of Windows Operating System, Windows Desktop, Booting, Shut Down and Standby options, Start Menu, Keyboard Shortcuts; Application Management using Control Panel, Installing and Uninstalling a software; System Tools: Disk Cleanup, Disk Fragmentation, Working with Windows Explorer; Basics of Linux

**Unit 3: Software Packages Word Processing:** Word processing concepts, Working with word document: Opening, Closing and saving options, Editing text, Find and replace text, Language checking and thesauruses, Formatting, spell check, Autocorrect, Autotext; Bullets and numbering, Paragraph Formatting, Indent, Page Formatting; Header and footer; Tables: Inserting and importing of tables, filling and formatting a table; Pictures and Video; Mail Merge; Printing documents; Keyboard Shortcuts

**Spreadsheet:** Spreadsheet concepts, Managing worksheets, Formatting of Worksheets and Cells, Entering data, Editing; Printing a worksheet; Organizing Charts and graphs; Formulas and Functions: Handling operators in formula; generally used Spreadsheet functions: Mathematical, Statistical, Financial, Logical, Date and Times; Keyboard Shortcuts

**Presentation Software:** Introduction and creation of the presentation, Use of Templates; Adding new slide, Navigating across slides, Use of Master Slide, slide show, Saving and Opening of presentation, Text formatting options, Copy, Move , Delete slides, Applying designs, Using Animations, Slide Transitions, Insert clip art, Insert sound/movies, Viewing the presentation; Taking printout of presentation/Handouts; Keyboard Shortcuts.

**Unit 4: Working with Internet**

Basics of Computer Network and Internet, Working with Internet, ISP, Web Browsers, World Wide Web (WWW), Uniform Resource Locator (URL) and Domain Names, Uses of Internet, Concept of Search Engines, IP Address, Applications of Internet, Chatting, Video-Conferencing, Email: Manage an E-mail Account, E-mail Address, configure E-mail Account, log to an E-mail, Sending and Receiving e-mails, sending files as attachments, Address Book; Uploading/ Downloading Files, Net Etiquettes. Social impact of ICT in Education, health care and Governance

**Unit 5: Cyber Security** Virus, Worms, Trojan and Anti-Virus software, Spyware, Malware, Spams, Data Backup and Recovery Tools, Indian IT ACT, Types of Cyber Crime, firewall, Cookies, Hackers and Crackers, Cyber Security Techniques: Authentication, Encryption, Digital Signatures, Anti-Virus, Firewall, Steganography.