

Contents

Chapter 1 Introduction to Computer

Introduction	1
What is Computer ?.....	2
Characteristics of Computer	2
Limitations of Computer	4
Use of Computer (Application Fields of Computer)	5
Types of Computer s	7
On the Basis of Work.....	7
On the Basis of Size	8
On the Basis of Brand.....	11
On the Basis of Model	12
Questions	12

Chapter 2 Computer System

Introduction	13
Logical Structure Block Diagram of Computer	14
Input Unit	14
Central Processing Unit (Process)	15
Registers	16
Auxiliary Storage	16
Output Unit	16
Data and Control Flow	16
Working Mechanism of Computer	17
Microprocessor	18
Some Microprocessors	18
Computer Memory	19
Primary Memory	20
Auxiliary Memory	22
Input Units	26
Keyboard	27
Mouse	27
Scanner	28
Joystick	29

Joypad	29
Graphics Table	29
MICR	29
OCR	29
OBR	30
Voice Reorganization Device	30
Touch Screen	30
Light Pen	31
Output Unit	31
VDU (Visual Display Unit)	32
Printer	34
Plotter	36
Speaker	37
Modem	37
CISC and RISC Design Architectures	38
CISC (Complex Instruction Set Computer)	38
Summary of CISC Design Architecture	39
RISC (Reduced Instruction Set Computers)	41
Summary of RISC Architecture	42
Hardwired Control Unit and Micro Programmed Control Unit	43
Questions	44

Chapter 3 **Number System**

Introduction	45
Decimal (Denary) Numbers	46
Binary Number	46
Nibble, Byte, word, ASCII, EBCDIC	47
Octal	49
Hexadecimal	49
Manipulation of Fractions	55
Binary Arithmetic	57
Complement Method	59
Logic Gates	60
Gate	60
AND	61
OR	61
NOT	61
NAND, NOR, EX-OR and EX-NOR	62
Venn Diagram	63

De Morgan's Theorem	63
Boolean Function	64
Logic Circuit or Logic Network	65
Questions	66

Chapter 4 **Software and Languages**

Introduction	67
System Software	68
Application Software	70
Word Processor	71
Spread Sheet	72
Presentation Tool	73
Introduction to Program and Programming Language	74
Machine Language and Assembly Language	74
Machine Language	74
Assembly Language	75
High Level Language	76
Fourth Generation Language	77
Assemblers, Compilers and Interpreters	77
Problem - Solving and Programming	78
Algorithms	78
Flowchart	79
Control Structures in Program Design (Three Basic Operations)	82
Procedures and Program	84
Structured Programming	84
Object Oriented Programming (OOP)	85
Scripting Language	86
Client-Side Scripting	87
Server-Side Scripting	87
Questions	88

Chapter 5 **System Development Life Cycle and Multimedia**

Introduction	89
What is System?	89
What is Information?	90
What is Information System?	90
What is System Development Life Cycle (SDLC)?	90
System Planning (Investigation)	91

System Analysis	91
System Design	91
System Development	92
System Implementation	92
System Maintenance and Evaluation	93
Multimedia	93
Introduction	93
Uses of Multimedia	94
Questions	97

Chapter 6 **Communication and Network**

Introduction	98
Data Communication	98
A Communications Model	100
Signals	101
Modulation Techniques	102
Amplitude Shift Keying (ASK)	102
Binary Frequency Shift Keying (BFSK)	103
Multiple Frequencies Shift Keying (MFSK)	103
Phase Shift Keying (PSK)	104
Binary Phase Shift Keying (BPSK)	104
Differential Phase Shift Keying (DPSK)	104
Introduction to Computer Network	105
Common Network Components	106
Application of Computer Network	107
Types of Networks	107
Transmission Medium	109
Types of Media	109
The Guided Media	109
Unguided Media	113
Network Devices (Communication Processor)	115
Repeater	115
Modem	115
Network Adapters	115
Hub	115
Switch	116
Bridges	116
Repeater	117
Router	117

Network Architecture	119
OSI Reference Model	119
Layers, Interfaces, and Protocols in the OSI Model	120
TCP/IP Model	121
Transport Protocols	122
The Internet Protocol (IP) and IP Address	124
Binary Notation	124
Dotted-Decimal Notation	125
IP Address Classes	125
Public and Private IP Addresses	125
Switching and Routing in Communication Networks	126
Circuit switching	126
Packet Switching Techniques	126
Routing Algorithms	127
Network Operating Systems	127
Network Models	128
Peer-to-peer Networks	128
Client-Server Networks	130
Network Topologies	130
Bus Topology	131
Ring Topology	132
Star Topology	133
Mesh Topology	134
Hybrid Topologies	134
Questions	135

Chapter 7 Introduction to the Internet E-commerce

Introduction	136
Intranet and Extranet	137
Extranet	138
Firewall	138
IP Address	139
Domain Naming System	139
Client-Server Architecture	140
World Wide Web (WWW)	141
Hypertext Markup Language (HTML)	142
HTTP	142
E-mail	143
FTP	143

Remote Login (Telnet -Terminal Emulation)	143
Static and Dynamic Web Page	144
Search Engines	144
Introduction to Electronic Commerce	145
Basic Concept of E-Commerce	145
Aspects of E-Commerce	145
Types of E-Commerce	145
Electronic Data Interchange (EDI)	146
Questions	147

Chapter 8 **Data Processing**

Introduction to Data Processing	148
Data Processing Operations	148
Data Storage Hierarchy	149
File Processing	149
Introduction to Database	150
Advantages of DBMS	151
Disadvantages of DBMS	152
Application of DBMS	153
Data Model	153
Networking Data Model	154
Relational Data Model	156
Keys	157
Types of keys	157
Database Languages	158
Data Definition Language (DDL)	158
Data Manipulation Language (DML)	159
Database System Structure	159
Storage Manager	159
Query Processing	160
Relational Database Management System (RDBMS)	160
Normalization	160
Questions	165

Chapter 9 **Data Mining and Data Warehousing**

Introduction	166
Characteristics Data Warehousing	166
Data Warehousing Applications	167
Data Warehouse Architecture	167
Data Mining: What is Data Mining?	168
Data, Information and Knowledge	168
What can Data Mining Do?	168
Elements of Data Mining	169
Benefits of Data Mining	169
Difference between Data warehouse and Data Mining	171
Online Analytical Processing (OLAP)	171
OLTP (Online Transaction Processing) and OLAP	171
Difference between OLTP (Online Transaction processing) and OLAP	171
Modern Databases	172
Distributed Databases	172
Object-oriented and Object-Relational Databases	173
Active Databases	173
Deductive Databases	173
Multidimensional Databases	174
Parallel Databases	174
Temporal Databases	174
Spatial Databases	175
Multimedia Databases	175
Web Databases	177
Mobile Databases	177
Geographic Information Systems	178
Data Management Requirements of GIS	179
Specific GIS Data Operations	180
Questions	181

Chapter 10 **Artificial Intelligence and Neural Networks**

Introduction to Artificial Intelligence	182
What is Intelligence?	183
Definition of Artificial Intelligence	183
Components of Artificial Intelligence	183

Cognitive Science Applications	183
Robotics Applications	184
Natural Interfaces Applications	184
Applications of Artificial Intelligence	184
Ethical Aspects of AI	185
Neural Network	185
A Simple Neuron	186
Genetic Algorithms	187
Genetic Algorithm Components	188
Applications of Genetic Algorithms	189
Questions	194

Chapter 11 Computer Security and Safety Measure

Introduction	195
Malicious Software (Malware)	195
Spyware	196
Computer Ethics for Computer User	197
Cyber Law	197
Network and Internet Security	198
Firewalls	198
Data and Message Security	200
Data Security	201
Message Security	201
Encryption and Decryption	201
Cryptographic Algorithms	201
Asymmetric (Public-key) Encryption	203
Questions	204

Chapter 12 Information Technology

Concept	205
Components of IT	206
Importance's of Information Technology	207
Business use of IT	208
Importance's of Information Technology in the Society	209
Applications of IT in Science and Engineering	210
Applications of IT in Government	211

Objectives of e-Governance	212
Application of IT in Teaching and E-learning	212
E-Learning Ways	213
Application of IT in Health and Medicine	213
Objectives of E-medicine	214
Application of IT in Commerce and Business	214
Types of E-commerce	214
Benefits of E-Commerce	215
Limitation of E-Commerce	216
Questions	216

Chapter 13 Financial Information System

Introduction	217
Inputs to the Financial Information System	218
Financial Information System's Subsystems and Outputs	218
Components of Financial Information System	219
People	219
Procedure and Instructions	219
Data	220
Software	220
Information Technology Infrastructure	220
Internal Controls	221
Features of FIS	221
FIS Building Blocks	222
Core Module	223
Noncore/other modules	224
Role of Financial Information System in Decision Making Process	226
Free Cash Flow	227
Economic Value-Added	227
Asset Management	228
Financing Decisions and Capital Structure	228
Profitability Ratios	228
Growth Indices	228
Risk Assessment and Management	228
Tax Optimization	229
Questions	229

Chapter 14 Marketing Information System

Marketing Information Systems	230
Components of a Marketing Information System	232
The Marketing Information Systems and Its Subsystems	232
Internal Reporting Systems	232
Marketing Research Systems	233
Marketing Intelligence Systems	234
Marketing Models	235
Features of MKIS	235
Role in Decision making	236
Questions	237

Chapter 15 Application Packages

Word Processor: MS-Word	238
Concept	238
Features of Word Processing	238
Applications of Word Processing	239
How to Start	239
Components of MSWORD	239
Saving a New File	240
Backspace and Delete	242
Type Over / Insert Key	242
Aligning Text	243
Using Undo - Ctrl + Z	243
Using Repeat - Ctrl + Y	244
Formatting Toolbar	244
Font Names	245
Using Color	245
Font Dialog Box	245
Font Size	246
Cut, Copy, Paste	247
Cut and Paste	247
Copy and Paste	247
Working with Copy, paste and cut	247
How to View and Hide Toolbars	249
Zoom Screen	249

Find and Replace	249
Spell and Grammar Check	251
Check Spelling	251
Check Grammar as you Type	252
Using Page Setup to Specify Margins	253
More Options on the Page Setup Dialog Box	253
Margins Tab	254
Paper Tab	254
Layout Tab	254
Indent Text	254
The Ruler	254
Bullets and Numbering	255
Create Bulleted and Numbered Lists	255
The Bullets and Numbering Dialog Box	256
Use of Symbols	257
Insert Headers and Footers	257
Header and Footer Toolbar	258
Delete Header and Footer	259
Working with Columns	259
Creating Columns Using the Columns Dialog Box	260
Drop Caps	261
Working with Tables	262
Custom-Made Tables	263
Creating Tables Using the Draw Tables Button	263
Entering Text	263
Moving Around in a Table	263
Selecting Text in Tables	264
Editing Tables	264
Formatting Text in Tables	264
Rotating Text in Tables	264
Inserting and Deleting Columns and Rows	265
Resizing Tables	266
Inserting Clip Art	266
Inserting Pictures from your Computer	267
Changing the Appearance of your Pictures	267
Drawing Objects	268
WordArt Drawing Objects	269

Formatting Drawing Objects	270
Questions	270
Spreadsheet: MS-Excel	271
Concept	271
Features of MS-Excel	271
Application of MS-Excel	272
Use of Excel for Data Analysis	272
How to Start	272
The Excel Window	272
Workbooks and Worksheets	274
Components of MSeExcel	275
Worksheet	275
Chart/Graph	275
Data Management	275
The Cell	276
Understanding File Terms	276
Creating a Workbook	277
Saving a Workbook	277
Opening a Workbook	278
Closing a Workbook	279
Performing Undo and Redo	279
Selecting Multiple Cells	280
Cut, Copy, Paste Defined	280
Copy and Paste Cell Contents	281
Cut and Paste Cell Contents	281
About Formulas	282
Creating a Simple Addition Formula	283
Creating a Simple Subtraction Formula Using the Point-and-Click Method	284
Creating Simple Multiplication Formulas	285
Creating Simple Division Formulas	285
Complex Formulas Defined	286
Creating Complex Formulas	287
Filling Formulas to Other Cells	288
Solved Examples on Ms Excel	288
Types of Cell Addresses / Reference	290
Relative Cell	290

Absolute Cell	291
Mixed Cell	291
Naming Worksheets	291
Inserting Worksheets	292
Deleting Worksheets	292
Copying Worksheets	292
Inserting a Row	293
Inserting a Column	293
Deleting Columns and Rows	294
Change Font Type, Size and Color	295
Selecting a Font Typeface	295
Underline, Italics and Bold	295
Adding a Border to Cells	296
Adding Color to Cells	296
Understanding the Different Chart Types	296
Identifying the Parts of a Chart	297
Creating a Chart Using the Chart Toolbar	298
Parts of the Chart Toolbar	298
Creating an Embedded Chart	298
Creating a Chart Sheet	299
Moving a Chart	299
Resizing a Chart	300
Deleting a Chart	300
Changing Chart Data	300
Changing the Chart Title	301
Changing the Data Series Names or Legend Text	301
Changing the Chart Type	301
Formatting the Chart Title	302
Formatting the Chart Legend	302
Formatting the Axis Labels	303
Changing the Data Series Color	304
Setting Page Margins	304
Changing the Page Orientation and Paper Size	304
Creating Headers and Footers	305
Inserting and Removing a Page Break	306
Printing a Worksheet or Workbook	306
Questions	307

Presentation: MS-Power Point	308
Concept	308
Features of Power Point	308
Application of Power Point	308
How to Start	309
The Parts of the PowerPoint Window	309
View Buttons and Slide Views	310
More Views	311
Creating a Blank Presentation	311
Choosing a Slide Layout	312
Saving a Presentation	312
Closing a Presentation and Exiting PowerPoint	312
Creating a New Presentation Using the Traditional Method	313
Opening a Presentation	313
Inserting a New Slide	313
Copying a Slide	314
Deleting a Slide	315
Slide Sorter View	315
Working with Slides in Normal View	315
Changing and viewing Slides in Outline View	316
Viewing Slides in Slide Show View	316
Applying a Design Template	316
Adding a Design to an Existing Presentation	317
Applying a Design Template to Selected Slides	317
A Closer View of Design Templates	318
Choosing a Color Scheme	318
Inserting Clip Art into a Slide	318
Inserting Pictures from File	319
Inserting Pictures or Clip Art Using a Slide Design Layout	319
Resizing Pictures and Clip Art	319
Inserting a Chart	320
Inserting a Diagram or Organization Chart	320
Inserting a Table	321
Inserting an AutoShape	323
Inserting WordArt	322
Animating Slides	323
Choosing Animation for Your Slides	323

Adding Custom Animation	323
Emphasis and Exit	324
Setting Direction and Speed	324
Animating a Bulleted List	325
Controlling Your Text	325
The Slide Master	326
Creating a Slide Master	326
Choosing Fonts for Levels of the Slide Master	327
Viewing the Slide Master Elements	327
The Title Master	328
Using Spell Check	328
Previewing and Printing	328
Printing a Slide Presentation	329
Adding Transition	329
Previewing a Slide Show	330
Setting Up a Slide Show	330
Questions	331
Adobe Photoshop	332
Manu Details of Photoshop	333
Creating a New Canvas / Image	333
Opening a Pre-existing Image	334
Tools used on Photoshop	334
Cropping an Image	336
Resizing an Image	336
Moving an Image	337
Selecting / Deleting a Part of an Image	338
Working with Magic Wand	338
Adding Text	339
Brush / Pencil Tool	339
Clone Tool	340
Eraser Tool	341
Gradient / Paint Bucket Tool	341
Blur Tool	342
Rotating an Image	343
Zoom Tool	343
Brightness & Contrast	344
Filters	344

Saving Images – PSD Format	345
Saving as a GIF (Graphics Interchange Format) File	345
Saving as a JPEG (Joint Photographic Expert Group) File	346
Questions	346
MS Access	347
Launching Microsoft Access from the Windows Desktop	347
The Main Access Window	348
The Database window	350
Objects on Ms Access	350
Table	351
Query	352
Form	352
Report	353
How to Create Table	353
Creating Table using Design View	353
How to Design Table using Table Wizards	356
Design Table Using Link and Import Table	357
How to Create Queries	357
How to Design Query	357
How to Create Forms	359
Creating form Using Design View	359
Creating form using Auto form Tabular and Auto Form Columnar	360
Form Wizards	361
How to Create Report	361
Design View	362
Report Wizards	363
Auto Report Columnar/ Auto Report Tabular	363
Questions	365
Workshop	366
 Bibliography	 367
TU Questions	368