CONTENTS

PAGE

Foreword *iii*

Recommended Reading *v*

Syllabus *vii*

Chapter-heads *ix*

MODULE I : TECHNOLOGY IN BANK

CHAPTER 1

BANKING ENVIRONMENT AND TECHNOLOGY

- Introduction *3*
- Evolution of Banking Technology over the years *4*
- Core Banking *6*
- Steps in the implementation of CBS *8*
- Delivery Channels *10*
- Core banking *vis-à-vis* standalone systems *11*
- Conclusion *13*

CHAPTER 2

OVERVIEW OF PROCESSING INFRASTRUCTURE

- IT Operation Processes *15*
- Various Payment and Settlement Systems *20*
- Electronic Clearing Service (ECS) *20*
- National Electronic Clearing Scheme (NECS) *21*
- Cheque Truncation System (CTS) *22*
- RTGS (Real Time Gross Settlement)/NEFT (National Electronic Funds Transfer) *23*

PAGE

- IMPS (Immediate Payment Service) 24
- Unified Payment Interface (UPI) by NPCI 25
- Process changes with Technology 28
- Conclusion 39

CHAPTER 3
ACCOUNTING INFORMATION SYSTEM

- Introduction 41
- Software architecture of a modern AIS 42
- Advantages and implications of AIS 43
- How to effectively implement AIS 44
- Conclusion 47

CHAPTER 4
INFORMATION ORGANIZATION AND MANAGEMENT

- Introduction 48
- Advantages 49
- The importance of management information system 49
- The information concept 50
- The information management concept 51
- The information systems concept 51
- Management Information Systems (MIS) 52
- Reporting requirement in banks 53
- CBS & MIS 54
- Difference between Data Warehouse & MIS 55
- Advantages of using data warehouse 56
- Transaction Processing *vis-a-vis* Analytical Processing 56
- Management functions and levels 56
- The nature of planning and decision making and the available techniques 57
- The importance of MIS to management 57
- Automated Data Flow (ADF) to the Regulator 58
- Conclusion 59

PAGE

CHAPTER 5

RISK ASSOCIATED WITH TECHNOLOGY IN BANKING

- Introduction *60*
- Risks Associated with Technology *61*
- Board and Management Oversight *62*
- Security Controls *63*
- Legal and Reputational Risk Management *64*
- Conclusion *68*

CHAPTER 6

AUDIT FUNCTION AND TECHNOLOGY

- Introduction *69*
- Conclusion *74*

MODULE II : TECHNOLOGY – SYSTEM, DEVELOPMENT, PROCESS, IMPLEMENTATION

CHAPTER 7

HARDWARE ARCHITECTURE

- Introduction *77*
- Types of Computer *77*
- Personal Computer *78*
- Components of a Computer *86*
- Various features of the Central Processing Unit *88*
- Conclusion *92*

PAGE

CHAPTER 8
SOFTWARE PLATFORMS

- Utility Programs *94*
- Distributed Systems *95*
- Advantages of distributed systems *95*
- Database management systems *97*
- Outline of the Chapter *97*
- Learning goals *97*
- Introduction *98*
- Database Management System overview *98*
- The various users of a database system *101*
- File Management System (FMS) *101*
- Drawbacks of file management system *102*
- DBA (Database Administrator) and his responsibilities *107*
- Responsibilities of Data Administrator (DA) and Database Administrator *108*
- Operators in SQL *122*

CHAPTER 9
SYSTEM DEVELOPMENT LIFE CYCLE

- Chapter Synopsis *124*
- Systems Concept *124*
- Need for systems analysis *125*
- Phases of SDLC *127*
- System Definition or Requirement Analysis *128*
- System Design *129*
- Program Construction or Coding *129*
- Testing *130*
- Implementation *131*

PAGE

- Maintenance 131
- Software Engineering Basics 132

CHAPTER 10
COMPUTER NETWORKS

- Types of Networks 135
- Basic Function of the OSI Models 156
- Advantages of the ISO, OSI Model 157
- Disadvantages of the ISO, OSI Model 158

MODULE III : COMMUNITY OF BUSINESS

CHAPTER 11
BUSINESS CONTINUITY & DISASTER RECOVERY PLANNING

- What is business continuity plan? 163
- What is Disaster recovery plan? 163
- What is the difference between BCP and DRP? 163
- Risk analysis of banking applications 164
- Types of processing systems 165
- Types of threats and disruptions 165
- Components of DRP 167
- Backup plan 168
- Test plan 173
- Insurance 175
- Practical aspects of DRP in Computerised Branches/ Control offices of Bank 175

PAGE

MODULE IV : OVERVIEW OF LEGAL FRAMEWORK

CHAPTER 12

ONLINE TRANSACTIONS - CONCEPTS, EMERGING TRENDS AND LEGAL IMPLICATIONS

- Chapter Synopsis *251*
- Nature of Online Transactions *252*
- Limitations of Traditional Money *252*
- Electronic Money - What it means and its benefits *253*
- Generic Features of E-Money Models *255*
- Regulatory Framework in the Indian Scenario *256*
- Electronic Payments Infrastructure in our Country and Emerging Trends *259*
- Institutional Electronic Funds Transfers & Settlements *263*
- Paperless Credit & SITPRO Model of Paperless Credit *268*

MODULE V : SECURITY & CONTROL STANDARD IN BANKING

CHAPTER 13

SECURITY

- The Information Technology Revolution *271*
- Need for Information Security *271*
- Newer Threats to Business with use of IT *273*
- Vulnerabilities of IS Systems *275*
- IS Risk Management - Process *276*
- Security Architecture - Elements of Computer Security *278*
- Computer Security should support the Organization Mission *278*

PAGE

- Computer Security is an Integral Element of Sound Management 280
- Computer Security should be Cost-Effective 281
- Computer Security Responsibilities and Accountability should be made explicit 282
- Systems owners have security responsibilities outside their own organizations 282
- Computer Security Requires a Comprehensive and Integrated Approach 283
- Computer Security should be Periodically Reassessed 284
- Computer Security is constrained by Societal Factors 284
- Computer Security Policy 285
- Policy, Standards, Guidelines and Procedures 286
- Key components of a Security Policy 287
- Monitoring Security 289
- Roles for Information Security in design, implementation and monitoring security 290

APPENDIX 1

OECD GUIDELINES FOR THE SECURITY OF INFORMATION SYSTEMS 292

APPENDIX 2

GENERALLY-ACCEPTED SYSTEM SECURITY PRINCIPLES (GASSP) VERSION 2.0 321

CHAPTER 14

CONTROL

- Need for Controls 353
- Application control framework 358

PAGE

MODULE VI : SECURITIES POLICIES, PROCEDURE AND CONTROLS

CHAPTER 15
DEVELOPMENT AND REVIEW OF SECURITY POLICIES AND CONTROL STANDARDS

- Introduction *393*
- Need for Information Security Policies *393*
- Computer Security Policy *395*
- Policy, Standards, Guidelines and Procedures *396*
- Key components of a Security Policy *397*
  - Scope of the policy *397*
  - Accountability *397*
  - Compliance *398*
- Monitoring Security *399*
- Roles for Information Security in design, implementation and monitoring *399*
- Conclusion *400*

CHAPTER 16
COMPLIANCE AND INCIDENT HANDLING

- Introduction *401*
- Application Control and Security *402*
- Compliance *404*
- Conclusion *408*

CHAPTER 17
NETWORK SECURITY

- Introduction *409*
- Factors for improvement of the security of networks *415*
- Conclusion *416*

PAGE

MODULE VII : INFORMATION SECURITY AND IS AUDIT

CHAPTER 18
INFORMATION SECURITY

- Introduction 419
  - Information Security 419
  - What are Information Security Policies ? 420
  - Difference Between Policy and Procedures & Guidelines 421
- Need for Information Security Policy and Guidelines 422
  - Implementation of Information Security Policy and Procedures 424
  - Information Systems Security Administration 425
- Information Security Policy Standards 430
  - Introduction 430
  - Scope 432
  - Standards for Information Control 437
- Information Security Procedures and Guidelines 442
  - User accounts and passwords 443
  - Access Control 444
  - Hardware acquisition 445
  - Operating System Security 445
  - Data Classification 448
  - Incident Handling 449
  - Change Management 456
  - Virus Control Procedures 459
  - Database Security 461
  - Network Security 465
  - Business continuity and Disaster recovery 476

PAGE

- Internet and e-mail 481
- Backup Restoration 487

CHAPTER 19
IS AUDIT

- Introduction on IS Audit 489
  - Introduction 489
  - Audit Objectives 489
- Audit in Computerized Environment 491
  - Understanding of Computerized Environment 491
  - Accounting Information Systems in Computerized Environment 492
  - Impact of IT on Economics of Auditing 493
  - Concept of Security 494
  - IS Management 494
  - Availability of Information Systems 495
  - Access Control 496
  - Database Management 497
  - Application Controls and their Functioning 497
  - Evaluation of Business Risks 498
  - Conversion Audit 499
- Audit Organization and Management 500
  - Organization Strategy 500
  - IS Audit as Review Management 507
- Risk Based Audit Framework 528
  - Introduction to the Risk-Based Audit Framework 528
  - Components of an RBAF 531
  - RBAF/RMAF Integration 541
- IS Audit Standards 542
  - Code of Professional Ethics 542
  - IS Auditing Standards 543
  - IS Auditing Guidelines 545

PAGE

- ◆ Use of Computer-Assisted Audit Techniques (CAATs) *546*
  - Background *546*
  - Planning *547*
  - Performance of Audit Work *550*
  - CAATs Documentation *551*
  - Reporting *552*

ANNEXURE A

INFORMATION TECHNOLOGY ACTS, STANDARDS & GUIDELINES *553*

ANNEXURE B

GLOSSARY *615*