# NETWORK MANAGEMENT SYSTEMS

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| Sub Code: 10CS834 | IA Marks | : 25 |
| Hrs/Week: 04 | Exam Hours | : 03 |
| Total Hrs: 52 | Exam Marks | : 100 |

## PART – A

### UNIT 1                                                                        7 Hours

**Introduction:** Analogy of Telephone Network Management, Data and Telecommunication Network Distributed computing Environments, TCP/IP-Based Networks: The Internet and Intranets, Communications Protocols and Standards- Communication Architectures, Protocol Layers and Services; Case Histories of Networking and Management – The Importance of topology , Filtering Does Not Reduce Load on Node, Some Common Network Problems; Challenges of Information Technology Managers, Network Management: Goals, Organization, and Functions- Goal of Network Management, Network Provisioning, Network Operations and the NOC, Network Installation and Maintenance; Network and System Management, Network Management System platform, Current Status and Future of Network Management.

### UNIT 2                                                                        6 Hours

**Basic Foundations: Standards, Models, and Language:** Network Management Standards, Network Management Model, Organization Model, Information Model – Management Information Trees, Managed Object Perspectives, Communication Model; ASN.1- Terminology, Symbols, and Conventions, Objects and Data Types, Object Names, An Example of ASN.1 from ISO 8824; Encoding Structure; Macros, Functional Model.

### UNIT 3                                                                        6 Hours

**SNMPv1 Network Management - 1 :** Managed Network: The History of SNMP Management, Internet Organizations and standards, Internet Documents, The SNMP Model, The Organization Model, System Overview.

### UNIT 4                                                                        7 Hours

**SNMPv1 Network Management – 2:** The Information Model – Introduction, The Structure of Management Information, Managed Objects, Management Information Base.The SNMP Communication Model – The SNMP Architecture, Administrative Model, SNMP Specifications, SNMP Operations, SNMP MIB Group, Functional Model

**UNIT 5**        **6 Hours**
**SNMP Management – RMON:** Remote Monitoring, RMON SMI and MIB, RMONI1- RMON1 Textual Conventions, RMON1 Groups and Functions, Relationship Between Control and Data Tables, RMON1 Common and Ethernet Groups, RMON Token Ring Extension Groups, RMON2 – The RMON2 Management Information Base, RMON2 Conformance Specifications; ATM Remote Monitoring, A Case Study of Internet Traffic Using RMON.

**UNIT 6**        **6 Hours**
**Broadband Network Management: ATM Networks:** Broadband Networks and Services, ATM Technology – Virtual Path-Virtual Circuit, TM Packet Size, Integrated Service, SONET, ATM LAN Emulation, Virtual LAN; ATM Network Management – The ATM Network Reference Model, The Integrated Local Management Interface, The ATM Management Information Base, The Role of SNMP and ILMI in ATM Management, M1 Interface: Management of ATM Network Element, M2 Interface: Management of Private Networks, M3 Interface: Customer Network Management of Public Networks, M4 Interface: Public Network Management, Management of LAN Emulation, ATM Digital Exchange Interface Management.
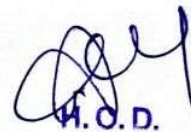
**UNIT 7**        **6 Hours**
**Broadband Network Management:** Broadband Access Networks and Technologies – Broadband Access Networks, roadband Access Technology; HFCT Technology – The Broadband LAN, The Cable Modem, The Cable Modem Termination System, The HFC Plant, The RF Spectrum for Cable Modem; Data Over Cable Reference Architecture; HFC Management – Cable Modem and CMTS Management, HFC Link Management, RF Spectrum Management, DSL Technology; Asymmetric Digital Subscriber Line Technology – Role of the ADSL Access Network in an Overall Network, ADSL Architecture, ADSL Channeling Schemes, ADSL Encoding Schemes; ADSL Management – ADSL Network Management Elements, ADSL Configuration Management, ADSL Fault Management, ADSL Performance Management, SNMP-Based ADSL Line MIB, MIB Integration with Interfaces Groups in MIB-2, ADSL Configuration Profiles.

**UNIT 8**        **8Hours**
**Network Management Applications:** Configuration Management- Network Provisioning, Inventory Management, Network Topology, Fault Management- Fault Detection, Fault Location and Isolation Techniques, Performance Management – Performance Metrics, Data Monitoring, Problem

Isolation, Performance Statistics; Event Correlation Techniques – Rule-Based Reasoning, Model-Based Reasoning, Case-Based Reasoning, Codebook correlation Model, State Transition Graph Model, Finite State Machine Model, Security Management – Policies and Procedures, Security Breaches and the Resources Needed to Prevent Them, Firewalls, Cryptography, Authentication and Authorization, Client/Server Authentication Systems, Messages Transfer Security, Protection of Networks from Virus Attacks, Accounting Management, Report Management, Policy-Based Management, Service Level Management.

**Text Books:**
1. Mani Subramanian: Network Management- Principles and Practice, 2nd Edition, Pearson Education, 2010.

**Reference Books:**
1. J. Richard Burke: Network management Concepts and Practices: a Hands-On Approach, PHI, 2008.

## INFORMATION AND NETWORK SECURITY

Subject Code: 10CS835          I.A. Marks  : 25
Hours/Week : 04               Exam  Hours: 03
Total Hours : 52              Exam Marks: 100

### PART – A

**UNIT 1**                                                    **6 Hours**
**Planning for Security:** Introduction; Information Security Policy, Standards, and Practices; The Information Security Blue Print; Contingency plan and a model for contingency plan

**UNIT 2**                                                    **6 Hours**
**Security Technology-1:** Introduction; Physical design; Firewalls; Protecting Remote Connections

**UNIT 3**                                                    **6 Hours**
**Security Technology – 2:** Introduction; Intrusion Detection Systems (IDS); Honey Pots, Honey Nets, and Padded cell systems; Scanning and Analysis Tools

**UNIT 4**                                                    **8 Hours**
**Cryptography:** Introduction; A short History of Cryptography; Principles of Cryptography; Cryptography Tools; Attacks on Cryptosystems.

### PART - B

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