

TABLE OF CONTENTS

UnitNo.	Title	Page No.
1	Foundations of Advanced Cloud Security 1.1 Evolution of Cloud Computing and Security Challenges 1.2 Cloud Service Models (IaaS, PaaS, SaaS) Security 1.3 SharedResponsibility Model 1.4 Cloud ThreatLandscape and RiskAssessment 1.5 Security Standards and ComplianceFrameworks	01-29
2	Identity and Access Management in Cloud 2.1 Advanced AuthenticationMechanisms 2.2 Role-Based and Attribute-Based Access Control 2.3 IdentityFederation and Single Sign-On (SSO) 2.4 Privileged Access Management (PAM) 2.5 Zero Trust Security Architecture	30-55
3	Cloud Data Protection and Privacy 3.1 Data Classification and Governance 3.2 Encryption Techniques for Data atRest and in Transit 3.3 Key Management Systems and HSMs 3.4 Data LossPreventionStrategies 3.5 PrivacyRegulations and ComplianceRequirements	56-83
4	Secure Cloud Infrastructure and Virtualization 4.1 Virtual Machine Security 4.2 Container and Kubernetes Security 4.3 Hypervisor Security Mechanisms 4.4 Network Segmentation and Micro-Segmentation 4.5 Infrastructure as Code (IaC) Security	84-109
5	Cloud Application Security 5.1 Secure Software DevelopmentLifecycle (SSDLC) 5.2 API Security and Protection Mechanisms 5.3 Serverless Application Security 5.4 DevSecOpsIntegration and Automation 5.5 Secure CI/CD Pipeline Management	110-134

6	ThreatDetection and Incident Response 6.1 Cloud Security Monitoring and Logging 6.2 Security Information and Event Management (SIEM) 6.3 Threat Intelligence and BehavioralAnalytics 6.4 Cloud Incident ResponseFrameworks 6.5 Digital Forensics in Cloud Environments	135-160
7	AI-Driven Cloud Security Applications 7.1 Machine Learning for ThreatDetection 7.2 AI-BasedAnomalyDetectionSystems 7.3 Predictive Security Analytics 7.4 Automated Security Orchestration and Response 7.5 Generative AI Security Risks and Mitigation	161-181
8	Emerging Trends and Advanced Security Applications 8.1 Multi-Cloud and Hybrid Cloud Security 8.2 Blockchain-Based Cloud Security Solutions 8.3 Quantum-SafeCryptography for Cloud 8.4 Security Challenges in Edge and FogComputing 8.5 Future Directions in Autonomous Cloud Security	182-203
	Reference	204