

Rajiv Gandhi Proudlyogiki Vishwavidyalaya, Bhopal
Syllabus VII Semester
Bachelor of Engineering (Information Technology)
Credit based Grading System (CBGS)

IT 7005 (A) Elective –IV Ad-hoc Networks

Unit I: Introduction :Introduction-Fundamentals of Wireless Communication Technology, The Electromagnetic Spectrum, GSM, GPRS, PCS, WLAN and UMTS, Components of Packet Radios, Routing in PRNETs, Route calculation, Pacing techniques, Ad Hoc Wireless Networks, Heterogeneity in Mobile Devices, Wireless Sensor Networks, Traffic Profiles, Types of Ad Hoc Mobile Communications, Types of Mobile Host Movements, Challenges Facing Ad Hoc Mobile Networks.

Unit II: Ad Hoc wireless MAC protocols- Introduction, Synchronous and asynchronous MAC protocols, Problem in Ad Hoc channel access, Receiver-initiated and sender-initiated MAC protocols, Existing Ad Hoc MAC protocols, Ad Hoc Routing Protocols- Introduction, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classifications of Routing Protocols: Table-Driven Routing Protocols – Destination Sequenced Distance Vector (DSDV), Wireless Routing Protocol (WRP), Cluster Switch Gateway Routing (CSGR), Source-Initiated On-Demand Approaches - Ad Hoc On-Demand Distance Vector Routing (AODV), Dynamic Source Routing (DSR), Temporally Ordered Routing Algorithm (TORA), Signal Stability Routing (SSR) Location- Aided Routing (LAR), Power-Aware Routing (PAR), Zone Routing Protocol (ZRP).

Unit III: Multicast routing In Ad Hoc Networks : Introduction, Issues in Designing a Multicast Routing Protocol, Operation of Multicast Routing Protocols, An Architecture Reference Model for Multicast Routing Protocols, Classifications of Multicast Routing Protocols, Tree-Based Multicast Routing Protocols, Mesh- Based Multicast Routing Protocols, Summary of Tree-and Mesh-Based Protocols - Energy-Efficient Multicasting, Multicasting with Quality of Service Guarantees, Application Dependent Multicast Routing, Comparisons of Multicast Routing Protocols.

Unit IV: Transport Layer, Security Protocols : Introduction, Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of Transport Layer Solutions, TCP Over Ad Hoc Wireless Networks, Other Transport Layer Protocols for Ad Hoc Wireless Networks, Security in Ad Hoc Wireless Networks, Network Security Requirements, Issues and Challenges in Security Provisioning, Network Security Attacks, Key Management, Secure Routing in Ad Hoc Wireless Networks.

Unit V: QoS and Energy Management : Introduction, Issues and Challenges in Providing QoS in Ad Hoc Wireless Networks, Classifications of QoS Solutions, MAC Layer Solutions, Network Layer Solutions, QoS Frameworks for Ad Hoc Wireless Networks, Energy Management in Ad Hoc Wireless Networks – Introduction, Need for Energy Management in Ad Hoc Wireless Networks, Classification of Energy Management Schemes, Battery Management Schemes, Transmission Power Management Schemes, System Power Management Schemes.

References Books:-

- 1 C. Siva Ram Murthy and B.S. Manoj “Ad Hoc Wireless Networks: Architectures and Protocols”, Pearson Education.
- 2 C.K. Toh, “Ad Hoc Mobile Wireless Networks: Protocols and Systems”, Pearson Education.
- 3 George Aggelou, “Mobile Wireless Networks”, Tata McGraw- Hill.
- 4 Charles E. Perkins, Ad Hoc Networking, Pearson Education.