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## **EL5071 BROADBAND ACCESS TECHNOLOGIES**

### **DETAILED SYLLABUS**

#### **UNIT I REVIEW OF ACCESS TECHNOLOGIES**

Phone-Line modem, cable-access, ISDN, Emerging Broad band Technologies, Cable DSL, Fiber and Wireless, Standards for access network.

#### **UNIT II DIGITAL SUBSCRIBER LINES**

Asymmetric Digital subscriber lines (ADSL) – Rate Adaptive subscriber line (RADSL)- ISDN Digital subscriber line (IDSL) - High bit rate DSL (HDSL)-Single line DSL (SDSL) - very high bit rate DSL (VDSL) - Standards for XDSL & Comparison.

#### **UNIT III CABLE MODEM**

Cable Modem, DOCSIS – Physical Cabling, Dual Modem Operation, Hub Restriction, Upstream Operation – Downstream operation – Access control – framing Security sub layer – Data link layer – LLC & Higher layers – ATM centric VS IP – centric cable modem.

#### **UNIT IV FIBER ACCESS TECHNOLOGIES**

Optical Fiber in access networks, Architecture and Technologies- Hybrid fiber – Coax (HFC) system, Switched Digital Video (SDV) – Passive optical networks (PON) – FTTX (FTTH, FTTB, FTTC, FTT cab) comparison, Broadband PON , Gigabit-Capable PON.

#### **UNIT V BROAD BAND WIRELESS**

Fixed Wireless, Direct Broadcast Satellite (DBS), Multi channel multi point distribution services (MMDS), Local multi point distribution services (LMDS), and Wideband integrated Digital Interactive Services (WIDIS), Mobile Wireless 3G – IMT 2000, Introduction to LTE-A.

#### **REFERENCES:**

1. Dennis J. Rauschmayer, “ADSL/VDSL Principles: A Practical and Precise Study of Asymmetric Digital Subscriber Lines and Very High Speed Digital Subscriber Lines”, Macmillan Technology Series, 1998.

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2. Gilbert Held, "Next Generation Modems: A Professional Guide to DSL and Cable Modems", John Wiley & Sons, 2000.
3. Leonid G. Kazovsky, Ning Cheng, Wei-Tao Shaw, David Gutierrez, Shing-Wa Wong, "Broadband Optical Access Networks", John Wiley and Sons, New Jersey, 2011.
4. Martin P. Clarke, "Wireless Access Network: Fixed Wireless Access and WLL Network Design and Operation", John Wiley & Sons 2000.
5. Niel Ransom and Albert A. Azzam, "Broadband Access Technologies: ADSL, VDSL Cable Modem, Fiber and LMDS", McGraw Hill, 1999.

### OBJECTIVES:

To give fundamental concepts related to broadband access technologies.

To understand the current and emerging wired and wireless access technologies.

To acquire knowledge about cable modems and fiber access technologies.

To have an exposure to different systems standards for next generation broadband access networks.