RCETECAC03 – Telecommunication

**Course outcomes:**

- Develop the skills of the students in preparing job search artifacts andnegotiating their use in GDs and interviews.
- Enable the students to adopt strategies for effective reading and writing
- skills.
- Enhance student's vocabulary, language and fluency. It would also teach thestudents to deliver professional presentations.

**Syllabus:**

## UNIT I

**Fundamentals of Telecommunication**

Telecommunications -- End User as a Telephone User -- Numbering capacity -- Busy Hour and Grade of Service -- Simplex, Half-Duplex, and Full Duplex – Types of topology.

## UNIT II

**Signaling in Telecommunication Systems**

Defining The Functional Areas -- Signaling Techniques -- Address Signaling – Compelled Signaling -- Effects Of Numbering on Signaling -- Signaling In The Subscriber Loop -- Metallic Trunk Signaling -- Basic Loop Signaling – Reverse-Battery Signaling -- SS7 layers and its Protocol -- Synchronous Digital hierarchy.

## UNIT III

**Traffic Engineering** Traffic measurement -- Grade of Service -- Mathematical Model -- Erlang Distribution – Holding time -- Lost- call systems -- Lost Calls Returned (LCR) System – Lost Calls Cleared (LCC) System -- Lost Calls Held (LCH) System -- Overflow Traffic.

## UNIT IV

**Telecommunication Services Engineering**

Definition for service engineering -- Telecommunication services engineering -- Asynchronous

Transfer Mode (ATM) -- Development of ATM -- ATM Protocol Layer -- ATM Adaptation Layer.

## UNIT V

**Quality of Service and Telecommunication Impairments**

Quality of Service -- Signal to Noise Ratio -- Voice Transmission -- Loudness Rating – Data Circuits Bit error rate (BER) -- Basic Impairments -- Phase Distortion -- Gaussian distribution -- Intermodulation Noise – Crosstalk -- Typical Levels -- The Internet.

### Reference Text Books:

1. Roger L. Freeman, "Fundamentals of Telecommunications", 4th Edition, John Wiley & Sons, 2010.

2. Jyrki T. J. Penttinen, "The Telecommunications Handbook: Engineering Guidelines forFixed, Mobile and Satellite Systems", 1st Edition, Wiley, 2015.

3. Thiagarajan Viswanathan, Manav Bhatnagar, "Telecommunication Switching Systems and Networks", 2 nd Edition, PHIlearning,2015.