Subject Code : RNR312B

Analog and Digital Communication

UNIT – I : Microwave Communication:

Klystron – Magnetron – Travelling wave tubes – Microwave propagation in cylindrical and rectangular wave guides – Directional couplers – Isolators – Attenuators – Magic standing wave detectors – TE-TM Modes – Crystal Detectors – Measurement of SWR – Radar – Transmitters and receivers – Block diagram – Radio telegraph transmitters – FSK and PSK types. ASK, MPSK and MFSK.

UNIT – II : Analog Modulation

Amplitude modulation – AM circuits – Doubles side band suppressed carrier system (DSB/SC) – Single side band suppressed carrier (SSB/SC) – Vestigial side band system (VSB) – Frequency modulation – Narrow band FM-Wide band FM-FM Circuits – Phase modulations –PM Circuits –Transmitters – Receivers.

UNIT – III : Digital Modulation

PAM-PPM-PDM-PCM modulators – Quantizers – Serial-Parallel – practical – PCM encoders – PCM decoders – Non-uniform quantization – companding – quantization of noise – Threshold effect – Delta modulation – Slope over load error – Adaptive Delta modulation – coding –code efficiency – Error detection and correction code.

UNIT – IV : Digital Communication

Introduction to base band digital communication – inter symbol interference – correlative coding – equalization –error control coding –cyclic codes (qualitative study) pass band digital communication ASK, FSK, PSK, DPSK – Bandwidth and error rates.

UNIT – V : Satellite Communication System

Satellite orbits, satellite frequencies, satellite attitude station keeping –power system – transmission path-path loss – noise consideration – satellite earth station – satellite station, antennas and transponders.

Books for Study and Reference:

1. Electronic Communication, Dennis Roddy & John Coolen, Prentice Hall of India, New Delhi.
2. Integrated Electronics, Millman Halkias, McGraw Hill,, New Delhi, 1971.
3. Electronic and Radio Engineering, Fredrick Emmona Terman, McGraw Hill, New Delhi.
4. Electronics for Scientists & Engineers, T.R.Visvanathan, G.R.Mehta, V.Rajaraman, Prentice Hall of India, New Delhi.
5. Switching Theory and Digital Electronics, V.K.Jain, Khanna Publishers, New Delhi.
6. Communication Systems and Techniques, M.Schwarta, W.R. Bennet, S.Stein, McGraw Hill, New Delhi.
7. Communication Systems, S.P. Lathi, Wiley Eastern, New Delhi.
8. Principles of Communication Systems, H.Teub & P.L. Schilling, McGraw Hill, New Delhi.