

M. Sc. II Year		MPH-E403			Semester-IV
ELECTIVE PAPER III		COMMUNICATION ELECTRONICS-II			
Total Lectures	Time Allotted for End Semester Examination	Marks Allotted for Continuous Assessment	Marks Allotted for End Semester Examination (ESE)	Maximum Marks (MM)	Total Credits
60	3 Hrs	30	70	100	04

NOTE: The question paper shall consist of two sections (Sec.-A and Sec.-B). Sec.-A shall contain 10 short answer type questions of six marks each and student shall be required to attempt any five questions. Sec.-B shall contain 8 descriptive type questions of ten marks each and student shall be required to attempt any four questions. Questions shall be uniformly distributed from the entire syllabus. The previous year paper/model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT-I

SIGNAL ANALYSIS & SAMPLING

System and signals, Signal representation using Fourier series, Signal representation using Fourier transform, Power spectral density.

Sampling theorem- Low Pass and Band Pass signals, PAM, Channel BW for a PAM signal, Natural sampling, Flat-top sampling, Signal recovery through Holding, Quantization of signals, Quantisation error.

(12 Lectures)

UNIT-II

PULSE MODULATION SYSTEMS

PCM, Differential PCM, Delta modulation, Adaptive delta modulation, Noise in pulse code and delta modulation Systems: Calculation of quantization noise, Output signal power, Output signal-to-noise ratio in PCM.

(12 Lectures)

UNIT-III

DIGITAL MODULATION TECHNIQUES

Binary phase shift keying (BPSK), Differential phase shift keying (DPSK), Quadrature phase shift keying (QPSK), Binary frequency shift keying (BFSK).

(12 Lectures)

UNIT-IV

MICROWAVE COMMUNICATION

Principle of velocity modulation, Reflex klystron and magnetron, Advantages and disadvantages of microwave transmission, Loss in free space, Propagation of microwaves, Atmospheric effects on propagation, Fresnel zone problem, Ground reflection.

(12 Lectures)

UNIT-V

RADAR SYSTEMS AND SATELLITE COMMUNICATION

Radar block diagram and operation, Radar range equation, Minimum detectable signal, Receiver noise, Radar cross-section, Pulse repetition frequency, Antenna parameters, Radar transmitters and receivers.

Satellite communications: Orbital and geostationary satellites, Orbital patterns, Look angles, Orbital spacings, Satellite systems, Link modules.

(12 Lectures)

Text Books / Reference Books

1. Principles of communication systems, 2/e - Taub and Schilling, TMH
2. Digital and Communication system - Roden H.S., PHI
3. Analog and Digital Communication - Chakraborty, Dhanpat Rai
4. Advanced Electronics Communication Systems - Wayne Tomasi., PhI. Edn.
5. Digital and Analog Communication System- K. San Shanmugam, John Wile & Sons
6. Microwaves- K.L. Gupta, Wiley Eastern Ltd., New Delhi
7. Satellite communication - D.C. Agrawal