

DISCIPLINE: Electrical & Electronics Engg.	SEMESTER: 5 th Semester	NAME OF THE TEACHING FACULTY: Mr.Bibhuti Gampal PTGF IN EEE
SUBJECT: WAVE PROPAGATION & BROADBAND COMMUNICATION ENGINEERING (TH4)	NO OF DAYS/PER WEEK CLASSES ALLOTTED:4	SEMESTER FROM DATE: 14.07.2025 TO DATE: 15.11.2025 NO OF WEEKS:15

Week	Class Day	Topics
		1. WAVE PROPAGATION & ANTENNA
1 ST	1 ST	Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2 ND	Classification based on Modes of Propagation-Ground wave, Ionosphere ,Sky wave propagation, Space wave propagation
	3 RD	ASSIGNMENT
	4 TH	Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height
2 ND	1 ST	Radiation mechanism of an antenna-Maxwell equation.
	2 ND	CLASS NOTES REVISION
	3 RD	Definition - Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern
	4 TH	Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna
3 RD	1 ST	ASSIGNMENT
	2 ND	Operation of following antenna with advantage & applications. a) Directional high frequency antenna : , Yagi & Rohmbus only b) UHF & Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna
	3 RD	Basic Concepts of Smart Antennas- Concept and benefits of smart antennas
	4 TH	TEST
		2. TRANSMISSION LINES
4 TH	1 ST	Fundamentals of transmission line.
	2 ND	Equivalent circuit of transmission line & RF equivalent circuit
	3 RD	Characteristics impedance, methods of calculations & simple numerical.
	4 TH	Losses in transmission line.
5 TH	1 ST	ASSIGNMENT
	2 ND	Standing wave – SWR, VSWR, Reflection coefficient, simple numerical
	3 RD	Quarter wave & half wavelength line

	4 TH	Impedance matching & Stubs – single & double
6 TH	1 ST	Primary & secondary constant of X-mission line.
	2 ND	TEST
		3. TELEVISION ENGINEERING
	3 RD	Define-Aspect ratio, Rectangular Switching. Flicker, Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulses
	4 TH	TV Transmitter – Block diagram & function of each block.
7 TH	1 ST	ASSIGNMENT
	2 ND	Monochrome TV Receiver -Block diagram & function of each block
	3 RD	Colour TV signals (Luminance Signal & Chrominance Signal,(I & Q,U & V Signals)
	4 TH	CLASS NOTES REVISION
8 TH	1 ST	Types of Televisions by Technology- cathode-ray tube TVs, Plasma Display Panels, Digital Light Processing (DLP),Liquid Crystal Display (LCD),Organic Light-Emitting Diode (OLED) Display, Quantum Light-Emitting Diode (QLED) – only Comparison based on application
	2 ND	ASSIGNMENT
	3 RD	Discuss the principle of operation - LCD display, Large Screen Display.
	4 TH	CATV systems & Types & networks
9 TH	1 ST	CLASS NOTES REVISION
	2 ND	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
	3 RD	TEST
		4. MICROWAVE ENGINEERING.
	4 TH	Define Microwave Wave Guides
10 TH	1 ST	Operation of rectangular wave guides and its advantage.
	2 ND	ASSIGNMENT
	3 RD	Propagation of EM wave through wave guide with TE & TM modes
	4 TH	Circular wave guide
11 TH	1 ST	CLASS NOTES REVISION
	2 ND	Operational Cavity resonator
	3 RD	Working of Directional coupler, Isolators & Circulator.
	4 TH	ASSIGNMENT
12 TH	1 ST	Microwave tubes-Principle of operational of two Cavity Klystron.
	2 ND	Principle of Operations of Travelling Wave Tubes
	3 RD	CLASS NOTES REVISION

	4 TH	Principle of Operations of Cyclotron
13TH	1 ST	Principle of Operations of Tunnel Diode & Gunn diode
	2 ND	TEST
		5. BROADBAND COMMUNICATION
	3 RD	Broadband communication system-Fundamental of Components and Network architecture
	4 TH	CLASS NOTES REVION
14TH	1 ST	Cable broadband data network- architecture, importance & future of broadband telecommunication internet based network
	2 ND	ASSIGNMENT
	3 RD	SONET(Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages
	4 TH	TEST
15TH	1 ST	ISDN - ISDN Devices interfaces, services, Architecture, applications,
	2 ND	ASSIGNMENT
	3 RD	BISDN -interfaces & Terminals, protocol architecture applications
	4 TH	TEST

G. Bibhu
10-9-25
Signature of Faculty

Osman
10.09.15
Signature of HOD