5TH SEM - ETC-WAVE PROPAGATION & BROADBAND COMMUNICATION ENGINEERING [THEORY 4] 4P/Week -15 Weeks, Tot - 60P

Name of the Faculty: Deepika Panda(Academic Year 2020-21)

WEEK	No. of Days/per week Class allotted: 4	Syllabus To be Covered
1ST	**1. WAVE PROPAGATION & ANTENNA.**	**[12 Periods]**
	1	Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2	Classification based on Modes of Propagation-Ground wave, Ionosphere ,Sky wave propagation, Spacewave propagation
	1	Definition – critical frequency, max. useable frequency, skip distance, fading
2ND	1	Definition – Duct propagation & Troposphere scatter propagation actual height and virtual height
	1	Radiation mechanism of an antenna-Maxwell equation
	2	Definition - Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance,efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern
3RD	1	Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna
	1	Operation of following antenna with advantage & applications. a) Directional high frequency antenna :Yagi & Rohmbus only
	1	Operation of following antenna with advantage & applications. b) UHF &Microwave antenna.: Dish antenna (with parabolic reflector) & Horn antenna
	1	Basic Concepts of Smart Antennas- Concept and benefits of smart antennas
4TH	**2. TRANSMISSION LINES.**	**[10 periods]**
	1	Fundamentals of transmission line.
	1	Equivalent circuit of transmission line ,General equivalent circuit &RF equivalent circuit
	1	Characteristics impedance, methods of calculations
	1	Characteristics impedance, simple numerical
5th	1	Losses in transmission line
	1	Standing wave – SWR, VSWR
	1	Reflection coefficient, simple numerical.
	1	Quarter wave & half wavelength line
6TH	1	Impedance matching & Stubs – single & double
	1	Derive equation for primary & secondary constant of X-mission line.
	3. TELEVISION ENGINEERING	**[13 periods]**
	1	State and explain the following terms.- Aspect ratio, Rectangular Switching. Flicker,Resolution,
	1	State and explain the following terms.-Resolution, Video bandwidth, Interlaced scanning

7th	1	State and explain the following terms.- Composite video signal, Synchronization pulses
	1	Draw the block diagram of TV transmitter and explain the function of each block.
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	1	Draw the block diagram of Monochrome TV Receiver and explain the function of each block.
8th	1	Draw the block diagram of Monochrome TV Receiver and explain the function of each block.
	1	Colour TV signals (Luminance Signal & Chrominance Signal,(I & Q,U & V Signals)
	1	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
	1	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
9TH	1	Discuss the principle of operation - LCD display, Large Screen Display
	1	CATV systems & Types & networks
	1	Explain (Digital TV Signals, Transmission of digital TV signals & Digital TV receivers Video programme processor unit.
	4. MICROWAVE ENGINEERING	**[15 periods]**
	1	Define Microwave Wave Guides.
10TH	1	Explain the operation of rectangular wave gives and its advantage.
	2	Discuss propagation of EM wave through wave guide with TE&TM modes.
	1	Explain circular wave guide.
11TH	2	Discuss the operational Cavity resonator.
	2	Discuss the operational of Directional coupler,Isolators & Circulator.
12TH	1	Discuss the principle of operational of two Cavity Klystron.
	2	Discuss the principle of Travelling Wave Tubes
	1	Discuss the principle of Cyclotron
13TH	1	Discuss the principle of Tunnel Diode
	1	Discuss the principle of Gunn Diode
	5. BROADBAND COMMUNICATION	**[10 periods]**
	1	Fundamental concepts Components of Broadband communication system,
	1	Network architecture of Broadband communication system,
14TH	2	Cable broadband data network architecture, importance & future of broadband telecommunication internet based network.
	2	SONET(Synchronous Optical Network)-Signal frame components topologies advantages applications,and disadvantages
15TH	2	ISDN - ISDN Devices interfaces, services, Architecture, applications
	2	BISDN -interfaces & Terminals, protocol architecture applications