

BLACK DIAMOND SCHOOL OF ENGINEERING, JHARSUGUDA**LESSON PLAN****Session 2022-2023**

Discipline: ETC	Semester:5th, winter/2022	Name of the Teaching Faculty: Mrs. Bagmi Rayguru Lecturer
Subject: Wave Propagation and Broadband Communication Theory-4	No. of Days/Week Class Allotted -4	Semester From Date: 14.09.2022 To Date: 21.01.2023 No. of Weeks: 15
Week	Class Day	Theory/ Topics
1st	1st	Effects of environments such as reflection, refraction, interference, diffraction, absorption and attenuation (Definition only)
	2nd	Classification based on Modes of Propagation-Ground wave, Ionosphere, Sky wave propagation, Space wave propagation.
	3rd	Definition – critical frequency, max. useable frequency, skip distance, fading, Duct propagation & Troposphere scatter propagation actual height and virtual height.
	4th	Definition - Antenna gains, Directive gain, Directivity, effective aperture, polarization, input impedance, efficiency, Radiator resistance, Bandwidth, Beam width, Radiation pattern.
2nd	1st	Antenna -types of antenna: Mono pole and dipole antenna and omni directional antenna.
	2nd	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.
	3rd	Revision, Doubt clearance
	4th	Basic Concepts of Smart Antennas- Concept and benefits of smart antennas.
3rd	1st	Fundamentals of transmission line.

		Equivalent circuit of transmission line & RF equivalent circuit.
	2nd	Characteristics impedance, methods of calculations & simple numerical. Losses in transmission line.
	3rd	Standing wave – SWR, VSWR, Reflection coefficient, simple numerical. Quarter wave & half wavelength line.
	4th	ASSIGNMENT CHECK
4th	1st	TEST
	2nd	Impedance matching & Stubs – single & double. Primary & secondary constant of X-mission line.
	3rd	Define-Aspect ratio, Rectangular Switching, Flicker, Horizontal Resolution, Video bandwidth, Interlaced scanning, Composite video signal, Synchronization pulses.
	4th	TV Transmitter – Block diagram & function of each block. Monochrome TV Receiver -Block diagram & function of each block.
5th	1st	Quiz Test 1
	2nd	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.
	3rd	Discuss the principle of operation - LCD display, Large Screen Display. CATV systems & Types & networks.
	4th	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
6th	1st	Revision
	2nd	Doubt clearance
	3rd	Digital TV Technology-Digital TV Signals, Transmission of digital TV signals & Digital TV receiver Video programme processor unit.
	4th	Define Microwave Wave Guides
7th	1st	ASSIGNMENT CHECK
	2nd	Operation of rectangular wave guides and its advantage.
	3rd	Propagation of EM wave through wave guide with TE & TM modes.
	4th	Circular wave guide.
8th	1st	Operational Cavity resonator.
	2nd	Distributing study materials.
	3rd	Working of Directional coupler, Isolators & Circulator.
	4th	Microwave tubes-Principle of operational of two Cavity Klystron.

9th	1 st	Principle of Operations of Travelling Wave Tubes .
	2 nd	Principle of Operations of Cyclotron
	3 rd	Revising the taught portions
	4 th	Microwave tubes-Principle of operational of two Cavity Klystron.
10th	1 st	Operational Cavity resonator
	2 nd	Revision
	3 rd	TEST
	4 th	Broadband communication system-Fundamental of Components and Network architecture.
11th	1 st	Cable broadband data network- architecture, importance & future of broadband telecommunication internet based network.
	2 nd	SONET(Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages .
	3 rd	Supplying the study materials
	4 th	Revision
12th	1 st	Doubt clearance
	2 nd	Cable broadband data network- architecture, importance & future of broadband telecommunication internet-based network.
	3 rd	Broadband communication system-Fundamental of Components and Network architecture.
	4 th	Quiz Test-2
13th	1 st	SONET (Synchronous Optical Network)-Signal frame components topologies advantages applications, and disadvantages .
	2 nd	ISDN - ISDN Devices interfaces, services, Architecture, applications,
	3 rd	ISDN - ISDN Devices interfaces, services, Architecture, applications,
	4 th	BISDN -interfaces & Terminals, protocol architecture applications
14th	1 st	BISDN -interfaces & Terminals, protocol architecture applications
	2 nd	Revising taught portions
	3 rd	Assignment checking
	4 th	Doubt clearance
15th	1 st	Class test
	2 nd	Previous year question Discussion
	3 rd	Previous year question Discussion
	4 th	Previous year question Discussion