

Discipline :- EN AND TC	Semester:- 6TH	Name of the Teaching Faculty: - JYOTIRMAYA SAMAL
Subject:- Advance Communication Engineering (TH-1)	No of Days/per Week Class Allotted :- 05	Semester From:- 10.03.2022 To:- 30.06,2022
Week	Class Day	Theory
1 st	1 st	1. RADAR & NAVIGATION AIDS. 1.1 Basic Radar, advantages & applications
	2 nd	1.2 Working principle of Simple Radar system , its types
	3 rd	1.3 Radar range equation & Performance factor of radar.
	4 th	1.4 Working principle of Pulsed Radar system.
	5 th	1.5 Function of radar indication and Working principle of moving target indicator.
2 nd	1 st	1.6 Define Doppler effect & Working principle of C.W Radar.
	2 nd	1.7 Radar aids to Navigation.
	3 rd	1.8 MTI Radar- working principle.
	4 th	1.9 Aircraft landing system.
	5 th	1.10 Navigation Satellite System.(NAVSAT) & GPS System.
3 rd	1 st	2. SATELLITE COMMUNICATION. 2.1 Basic Satellite Transponder & Kepler's Laws.
	2 nd	2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO)categories.
	3 rd	2.3 Concept of Geostationary Satellite, calculate its height,velocity & round trip time delay & their advantage & disadvantage.
	4 th	2.4 Working of the Satellite sub system.
	5 th	2.5 Satellite frequency allocation and frequency bands.
4 th	1 st	2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)
	2 nd	2.7 Working principle of direct broadcast system (DBS)
	3 rd	2.8 Working principle of VSAT system.
	4 th	2.9 Define multiple accessing & name various types.
	5 th	2.10 Time Division Multiple Accessing(TDMA) & – block diagram,its advantages & dis-advantages.
5 th	1 st	2.10 Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.
	2 nd	2.11 Satellite Application- Communication Satellite(MSAT),
	3 rd	2.11 Digital Satellite Radio.
	4 th	2.12 Working principle of GPS Receiver & Transmitter&applications.
	5 th	2.13 Optical Satellite Link transmitter & Receiver
6 th	1 st	3. OPTICAL FIBER COMMUNICATION. 3.1 Basic principle of Optical communication. 3.2 Compare the advantage and disadvantage of optical fibres & metallic cables
	2 nd	3.3 Electromagnetic Frequency and wave line spectrum
	3 rd	3.4 Types of optical fibres & principles of propagation in a fibre using Ray Theory
	4 th	3.5 Optical fiber construction.
	5 th	3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle numerical aperture.

7 th	1 st	3.7 Optical fibre communication system- block diagram & working principle
	2 nd	3.8 Modes of propagation and index profile of optical fiber
	3 rd	3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index
	4 th	3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion
	5 th	3.11 Optical sources (Transmitter) & types – LED- semiconductor laser diodes
8 th	1 st	3.12 LASER -its working principles, block diagram using laser feedback control circuit
	2 nd	3.13 Optical detectors – PIN and APD diodes & Block diagram using APD Connectors and splices – Optical cables - Couplers
	3 rd	3.14 Optical repeater & Single Channel system
	4 th	3.15 Applications of optical fibres – civil, Industry and Military application
	5 th	3.16 Concept of Wave Length Division Multiplexing (WDM) principles.
9 th	1 st	4. TELECOMMUNICATION SYSTEM 4.1 Working of Electronic Telephone System. (Telephone Set)
	2 nd	4.2 Function of switching system AND call procedure.
	3 rd	ASSIGNMENT
	4 th	4.3 Space and time switching.
	5 th	4.4 Numbering plan of telephone networks (National Schemes & International Numbering)
10 th	1 st	4.5 Working principle of a PBX & Digital EPABX.
	2 nd	4.5 Working principle of Digital EPABX.
	3 rd	4.6 Units of Power Measurement.
	4 th	4.7 Working principle of Internet Protocol Telephone
	5 th	4.8 Working principle of Internet Telephone
11 th	1 st	5. DATA COMMUNICATION 5.1 Basic concept of Data Communication
	2 nd	5.2 Architecture, Protocols and Standards
	3 rd	5.3 Data Communication Circuits
	4 th	5.4 Types of Transmission
	5 th	5.4 Transmission Modes
12 th	1 st	5.5 Data Communication codes
	2 nd	5.6 Basic idea of Error control AND error detection
	3 rd	ASSIGNMENT
	4 th	5.7 MODEM & its basic block diagram
	5 th	5.7 ITS block diagram common features Voice Band Modem
13 th	1 st	6. WIRELESS COMMUNICATION 6.1 Basic concept of Cell Phone, frequency reuse channel assignment strategic
	2 nd	6.1 handoff co-channel Interference and system capacity of a Cellular Radio systems.
	3 rd	6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)
	4 th	6.3 Wireless Systems and its Standards.
	5 th	6.4 Discuss the GSM (Global System for Mobile) service and features.
14 th	1 st	6.5 Architecture of GSM system &
	2 nd	6.5 GSM mobile station & channel types of GSM system.
	3 rd	6.6 working of forward and reverse CDMA channel, the frequency and channel specifications

	4 th	ASSIGNMENT
	5 th	6.7 Architecture and features of GPRS.
15TH	1 ST	6.8 Discuss the mobile TCP, IP protocol.
	2 ND	6.9 Working of Wireless Application Protocol (WAP).
	3 RD	6.10 Features of SMS, MMS, 1G,2G,
	4 TH	6.103G, 4G& 5G Wireless network.
	5 TH	6.11 Smart Phone and discuss its features indicate through Blockdiagram.