GANDHI SCHOOL OF ENGINEERING

BHABANDHA, BERHAMPUR

BRANCH:- ELECTRONICS & TELECOMMUNICATION ENGINEERING

SEMESTER:- 6TH

SUBJECT:- ADVANCE COMMUNICATION ENGINEERING

Name of the Faculty- ER. PRABHAMAYEE ACHARYA

			Topic to be taken			Actual topic taken		
Sl. No	Topic/Module	No. of period	Details of the topics	Date	Topic No.	Topic Name	Date	Remarks
1	RADAR & NAVIGATION AIDS	10	1.1 Basic Radar, advantages & applications 1.2 Working principle of Simple Radar system , its types 1.3 Radar range equation &Performance factor of radar. 1.4 Working principle of Pulsed Radar system. 1.5 Function of radar indication and Working principle of moving target indicator. 1.6 Define Doppler effect&Working principle of C.W Radar. 1.7 Radar aids to Navigation 1.8 MTI Radar- working principle 1.9 Aircraft landing system. 1.10 Navigation Satellite System.(NAVSAT) & GPS System	18/01/2024 To 03/02/2024	1.1	Basic Radar, advantages & applications	18/01/2024	
					1.2	Working principle of Simple Radar system , its types	19/01/2024	
					1.3	Radar range equation &Performance factor of radar.	20/01/2024	
					1.4	Working principle of Pulsed Radar system.	22/01/2024	
					1.5	Function of radar indication and Working principle of moving target indicator.	24/01/2024	
					1.6	Define Doppler effect&Working principle of C.W Radar.	25/01/2024	
					1.7	Radar aids to Navigation	31/01/2024	
					1.8	MTI Radar- working principle	01/02/2024	
					1.9	Aircraft landing system.	02/02/2024	

					1.10	Navigation Satellite System.(NAVSAT) & GPS System	03/02/2024	
2	SATELLITE COMMUNICATION	15	2.1 Basic Satellite Transponder & Kepler's Laws 2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories 2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage 2.4 Working of the Satellite sub system 2.5 Satellite frequency allocation and frequency bands. 2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink) 2.7 Working principle of direct broadcast system (DBS) 2.8 Working principle of VSAT system. 2.9 Define multiple accessing & name various types. 2.10 Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages. 2.11 Satellite Application-Communication Satellite(MSAT), Digital Satellite Radio. 2.12 Working principle of GPS Receiver & Transmitter& applications. 2.13 Optical Satellite Link transmitter & Receiver	05/02/2024 To 22/02/2024	2.1	Basic Satellite Transponder & Kepler's Laws	05/02/2024	
					2.2	Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories	06/02/2024	
					2.3	Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage	07/02/2024	
					2.4	Working of the Satellite sub system	08/02/2024	
					2.5	Satellite frequency allocation and frequency bands.	09/02/2024	
					2.6	General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)	10/02/2024	
					2.7	Working principle of direct broadcast system (DBS)	12/02/2024	
					2.8	Working principle of VSAT system.	13/02/2024	
					2.9	Define multiple accessing & name various types.	15/02/2024	
					2.10	Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & dis-advantages.	16/02/2024 & 17/02/2024	
					2.11	Satellite Application-Communication Satellite(MSAT), Digital Satellite Radio.	19/02/2024	

					2.12	Working principle of GPS Receiver & Transmitter& applications.	20/02/2024	
					2.13	Optical Satellite Link transmitter & Receiver	21/02/2024 & 22/02/2024	
3	OPTICAL FIBER COMMUNICATION	15	3.1 Basic principle of Optical communication. 3.2 Compare the advantage and disadvantage of optical fibres&metallic cables 3.3 Electromagnetic Frequency and wave line spectrum 3.4 Types of optical fibres&principles of propogation in a fibre using Ray Theory 3.5 Optical fiber construction 3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle numericalaperture 3.7 Optical fibre communication system- block diagram & working principle 3.8 Modes of propagation and index profile of optical fiber 3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index 3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion 3.11 Optical sources(Transmitter) & types – LED- semiconductor laser diodes 3.12 LASER -its working principles, block diagram using laser feedback control circuit 3.13 Optical detectors – PIN and APD	24/02/2024 To 15/03/2024	3.1	Basic principle of Optical communication.	24/02/2024	
					3.2	Compare the advantage and disadvantage of optical fibres&metallic cables	26/02/2024	
					3.3	Electromagnetic Frequency and wave line spectrum	27/02/2024	
					3.4	Types of optical fibres&principles of propogation in a fibre using Ray Theory	28/02/2024	
					3.5	Optical fiber construction	28/02/2024	
					3.6	Define terms: Velocity of propagation, Critical angle, Acceptance angle numericalaperture	29/02/2024	
					3.7	Optical fibre communication system- block diagram & working principle	02/03/2024	
					3.8	Modes of propagation and index profile of optical fiber	04/03/2024	
					3.9	Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index	06/03/2024	

			diodes &Block diagram using APDConnectors and splices –Optical cables - Couplers 3.14 Optical repeater & Single Channel system 3.15 Applications of optical fibres – civil, Industry and Military application 3.16 Concept of Wave Length Division Multiplexing (WDM) principles.		3.10	Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion	07/03/2024 & 11/03/2024	
					3.11	Optical sources(Transmitter) & types – LED- semiconductor laser diodes	12/03/2024	
					3.12	LASER -its working principles, block diagram using laser feedback control circuit	13/03/2024	
					3.13	Optical detectors – PIN and APD diodes &Block diagram using APDConnectors and splices – Optical cables - Couplers	13/03/2024	
					3.14	Optical repeater & Single Channel system	15/03/2024	
					3.15	Applications of optical fibres – civil, Industry and Military application	15/03/2024	
					3.16	Concept of Wave Length Division Multiplexing (WDM) principles.	15/03/2024	
4	TELECOMMUNICA TION SYSTEM	10	4.1 Working of Electronic Telephone System. (Telephone Set) 4.2 Function of switching system.& Call procedures 4.3 Space and time switching. 4.4 Numbering plan of telephone networks (National Schemes & International Numbering) 4.5 Working principle of a PBX & Digital EPABX. 4.6 Units of Power Measurement. 4.7 Working principle of Internet Protocol Telephone 4.8 Working principle of Internet	16/03/2024 To 27/03/2024	4.1	Working of Electronic Telephone System. (Telephone Set)	16/03/2024 & 18/03/2024	
					4.2	Function of switching system.& Call procedures	19/03/2024	
					4.3	Space and time switching.	20/03/2024	
					4.4	Numbering plan of telephone networks (National Schemes & International Numbering)	20/03/2024	

			Telephone		4.5	Working principle of a PBX & Digital EPABX.	21/03/2024 & 22/03/2024	
					4.6	Units of Power Measurement.	23/03/2024	
					4.7	Working principle of Internet Protocol Telephone	27/03/2024	
					4.8	Working principle of Internet Telephone	27/03/2024	
`5	Data Communication	10	5.1 Basic concept of Data Communication	28/03/2024 To 10/04/2024	5.1	Basic concept of Data Communication	28/03/2024	
			5.2 Architecture, Protocols and Standards		5.2	Architecture, Protocols and Standards	30/03/2024	
			5.3 Data Communication Circuits		5.3	Data Communication Circuits	02/04/2024 & 03/04/2024	
			5.4 Types of Transmission & Transmission Modes		5.4	Types of Transmission & Transmission Modes	04/04/2024 & 05/04/2024	
			5.5 Data Communication codes		5.5	Data Communication codes	06/04/2024	
			5.6 Basic idea of Error control & Error Detection		5.6	Basic idea of Error control & Error Detection	08/04/2024	
			5.7 MODEM & its basic block diagram& common features Voice Band Modem		5.7	MODEM & its basic block diagram& common features Voice Band Modem	09/04/2024 & 10/04/2024	

6	WIRELESS COMMUNICATION	15	6.1 Basic concept of Cell Phone,frequency reuse channel assignment strategic handoff co-channel Interference and system capacity of a Cellular Radio systems. 6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring) 6.3 Wireless Systems and its Standards. 6.4 Discuss the GSM (Global System for Mobile) service and features. 6.5 Architecture of GSM system & GSM mobile station &channel types of GSM system. 6.6 working of forward and reveres CDMA channel,the frequency and channel specifications 6.7 Architecture and features of GPRS. 6.8 Discuss the mobile TCP, IP protocol. 6.9 Working of Wireless Application Protocol (WAP). 6.10 Features of SMS, MMS, 1G,2G, 3G, 4G& 5G Wireless network. 6.11 Smart Phone and discuss its features indicate through Block diagram.	12/04/2024 To 26/04/2024	6.1	Basic concept of Cell Phone,frequency reuse channel assignment strategic handoff co-channel Interference and system capacity of a Cellular Radio systems.	12/04/2024 & 13/04/2024	
					6.2	Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)	15/04/2024	
					6.3	Wireless Systems and its Standards.	16/04/2024	
					6.4	Discuss the GSM (Global System for Mobile) service and features.	18/04/2024	
					6.5	Architecture of GSM system & GSM mobile station &channel types of GSM system.	19/04/2024 & 20/04/2024	
					6.6	working of forward and reveres CDMA channel,the frequency and channel specifications	22/04/2024 & 23/04/2024	
					6.7	Architecture and features of GPRS.	24/04/2024	
					6.8	Discuss the mobile TCP, IP protocol.	24/04/2024	
					6.9	Working of Wireless Application Protocol (WAP).	25/04/2024	
					6.10	Features of SMS, MMS, 1G,2G, 3G, 4G& 5G Wireless network.	26/04/2024	
					6.11	Smart Phone and discuss its features indicate through Block diagram.	26/04/2024	

HOD