



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	13/02/2023 To 24/02/2023	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9	Basic Radar, advantages & applications Working principle of Simple Radar system , its types Radar range equation &Performance factor of radar. Working principle of Pulsed Radar system. Function of radar indication and Working principle of moving target indicator. Define Doppler effect&Working principle of C.W Radar. Radar aids to Navigation MTI Radar- working principle Aircraft landing system.	13/02/2023 14/02/2023 15/02/2023 16/02/2023 17/02/2023 20/02/2023 21/02/2023 22/02/2023 23/02/2023	

					1.10	Navigation Satellite System.(NAVSAT) & GPS System	24/02/2023	
2	SATELLITE COMMUNICATION	15	<p>2.1 Basic Satellite Transponder & Kepler's Laws</p> <p>2.2 Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories</p> <p>2.3 Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage</p> <p>2.4 Working of the Satellite sub system</p> <p>2.5 Satellite frequency allocation and frequency bands.</p> <p>2.6 General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)</p> <p>2.7 Working principle of direct broadcast system (DBS)</p> <p>2.8 Working principle of VSAT system.</p> <p>2.9 Define multiple accessing & name various types.</p> <p>2.10 Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & disadvantages.</p> <p>2.11 Satellite Application-Communication Satellite(MSAT), Digital Satellite Radio.</p> <p>2.12 Working principle of GPS Receiver & Transmitter& applications.</p> <p>2.13 Optical Satellite Link transmitter & Receiver</p>	<p>25/02/2023</p> <p>To</p> <p>16/03/2023</p>	2.1	Basic Satellite Transponder & Kepler's Laws	25/02/2023	
					2.2	Satellite Orbital patterns and elevation(LEO,MEO & GEO) categories	27/02/2023	
					2.3	Concept of Geostationary Satellite, calculate its height, velocity & round trip time delay & their advantage & disadvantage	28/02/2023	
					2.4	Working of the Satellite sub system	01/03/2023	
					2.5	Satellite frequency allocation and frequency bands.	02/03/2023	
					2.6	General structure of satellite Link system (Uplink, Down link, Transponder, Crosslink)	03/03/2023	
					2.7	Working principle of direct broadcast system (DBS)	04/03/2023	
					2.8	Working principle of VSAT system.	06/03/2023	
					2.9	Define multiple accessing & name various types.	09/03/2023	
					2.10	Time Division Multiple Accessing(TDMA) & Code Division Multiple Accessing (CDMA) – block diagram, its advantages & disadvantages.	10/03/2023 & 11/03/2023	
					2.11	Satellite Application-Communication Satellite(MSAT), Digital Satellite Radio.	13/03/2023	

					2.12	Working principle of GPS Receiver & Transmitter & applications.	14/03/2023	
					2.13	Optical Satellite Link transmitter & Receiver	15/03/2023 & 16/03/2023	
3	OPTICAL FIBER COMMUNICATION	15	<p>3.1 Basic principle of Optical communication.</p> <p>3.2 Compare the advantage and disadvantage of optical fibres & metallic cables</p> <p>3.3 Electromagnetic Frequency and wave line spectrum</p> <p>3.4 Types of optical fibres & principles of propagation in a fibre using Ray Theory</p> <p>3.5 Optical fiber construction</p> <p>3.6 Define terms: Velocity of propagation, Critical angle, Acceptance angle numerical aperture</p> <p>3.7 Optical fibre communication system- block diagram & working principle</p> <p>3.8 Modes of propagation and index profile of optical fiber</p> <p>3.9 Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index</p> <p>3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion</p> <p>3.11 Optical sources (Transmitter) & types – LED- semiconductor laser diodes</p> <p>3.12 LASER -its working principles, block diagram using laser feedback control circuit</p> <p>3.13 Optical detectors – PIN and APD</p>	17/03/2023 To 05/04/2023	3.1	Basic principle of Optical communication.	17/03/2023	
					3.2	Compare the advantage and disadvantage of optical fibres & metallic cables	17/03/2023	
					3.3	Electromagnetic Frequency and wave line spectrum	18/03/2023	
					3.4	Types of optical fibres & principles of propagation in a fibre using Ray Theory	20/03/2023	
					3.5	Optical fiber construction	21/03/2023	
					3.6	Define terms: Velocity of propagation, Critical angle, Acceptance angle numerical aperture	22/03/2023	
					3.7	Optical fibre communication system- block diagram & working principle	23/03/2023	
					3.8	Modes of propagation and index profile of optical fiber	24/03/2023	
					3.9	Types optical fiber configuration: Single-mode step index, Multi-mode step index, Multi-mode Graded index	25/03/2023	

			<p>diodes & Block diagram using APD Connectors and splices – Optical cables - Couplers</p> <p>3.14 Optical repeater & Single Channel system</p> <p>3.15 Applications of optical fibres – civil, Industry and Military application</p> <p>3.16 Concept of Wave Length Division Multiplexing (WDM) principles.</p>		<p>3.10 Attenuation in optical fibers – Absorption losses, scattering, losses, bending losses, core and cladding losses- Dispersion – material Dispersion, waveguide dispersion, Intermodal dispersion</p> <p>3.11 Optical sources (Transmitter) & types – LED- semiconductor laser diodes</p> <p>3.12 LASER -its working principles, block diagram using laser feedback control circuit</p> <p>3.13 Optical detectors – PIN and APD diodes & Block diagram using APD Connectors and splices – Optical cables - Couplers</p> <p>3.14 Optical repeater & Single Channel system</p> <p>3.15 Applications of optical fibres – civil, Industry and Military application</p> <p>3.16 Concept of Wave Length Division Multiplexing (WDM) principles.</p>	<p>27/03/2023 & 28/03/2023</p> <p>29/03/2023</p> <p>31/03/2023</p> <p>03/04/2023</p> <p>04/04/2023</p> <p>04/04/2023</p> <p>05/04/2023</p>	
4	TELECOMMUNICATION SYSTEM	10	<p>4.1 Working of Electronic Telephone System. (Telephone Set)</p> <p>4.2 Function of switching system. & Call procedures</p> <p>4.3 Space and time switching.</p> <p>4.4 Numbering plan of telephone networks (National Schemes & International Numbering)</p> <p>4.5 Working principle of a PBX & Digital EPABX.</p> <p>4.6 Units of Power Measurement.</p> <p>4.7 Working principle of Internet Protocol Telephone</p> <p>4.8 Working principle of Internet</p>	06/04/2023 To 19/04/2023	<p>4.1 Working of Electronic Telephone System. (Telephone Set)</p> <p>4.2 Function of switching system. & Call procedures</p> <p>4.3 Space and time switching.</p> <p>4.4 Numbering plan of telephone networks (National Schemes & International Numbering)</p>	<p>06/04/2023 & 08/04/2023</p> <p>10/04/2023</p> <p>11/04/2023</p> <p>12/04/2023</p>	

			Telephone		4.5	Working principle of a PBX & Digital EPABX.	13/04/2023 & 15/04/2023	
					4.6	Units of Power Measurement.	17/04/2023	
					4.7	Working principle of Internet Protocol Telephone	18/04/2023	
					4.8	Working principle of Internet Telephone	19/04/2023	
5	Data Communication	10	5.1 Basic concept of Data Communication 5.2 Architecture, Protocols and Standards 5.3 Data Communication Circuits 5.4 Types of Transmission & Transmission Modes 5.5 Data Communication codes 5.6 Basic idea of Error control & Error Detection 5.7 MODEM & its basic block diagram & common features Voice Band Modem	20/04/2023 To 02/05/2023	5.1	Basic concept of Data Communication	20/04/2023	
					5.2	Architecture, Protocols and Standards	21/04/2023	
					5.3	Data Communication Circuits	24/04/2023 & 25/04/2023	
					5.4	Types of Transmission & Transmission Modes	26/04/2023 & 27/04/2023	
					5.5	Data Communication codes	28/04/2023	
					5.6	Basic idea of Error control & Error Detection	29/04/2023	
					5.7	MODEM & its basic block diagram & common features Voice Band Modem	01/05/2023 & 02/05/2023	

6	WIRELESS COMMUNICATION	15	<p>6.1 Basic concept of Cell Phone, frequency reuse channel assignment strategic handoff co-channel Interference and system capacity of a Cellular Radio systems.</p> <p>6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)</p> <p>6.3 Wireless Systems and its Standards.</p> <p>6.4 Discuss the GSM (Global System for Mobile) service and features.</p> <p>6.5 Architecture of GSM system & GSM mobile station & channel types of GSM system.</p> <p>6.6 working of forward and reverse CDMA channel, the frequency and channel specifications</p> <p>6.7 Architecture and features of GPRS.</p> <p>6.8 Discuss the mobile TCP, IP protocol.</p> <p>6.9 Working of Wireless Application Protocol (WAP).</p> <p>6.10 Features of SMS, MMS, 1G, 2G, 3G, 4G & 5G Wireless network.</p> <p>6.11 Smart Phone and discuss its features indicate through Block diagram.</p>	03/05/2023 To 22/05/2023	<p>6.1 Basic concept of Cell Phone, frequency reuse channel assignment strategic handoff co-channel Interference and system capacity of a Cellular Radio systems.</p> <p>6.2 Concept of improving coverage and capacity in cellular system (Cell Splitting, Sectoring)</p> <p>6.3 Wireless Systems and its Standards.</p> <p>6.4 Discuss the GSM (Global System for Mobile) service and features.</p> <p>6.5 Architecture of GSM system & GSM mobile station & channel types of GSM system.</p> <p>6.6 working of forward and reverse CDMA channel, the frequency and channel specifications</p> <p>6.7 Architecture and features of GPRS.</p> <p>6.8 Discuss the mobile TCP, IP protocol.</p> <p>6.9 Working of Wireless Application Protocol (WAP).</p> <p>6.10 Features of SMS, MMS, 1G, 2G, 3G, 4G & 5G Wireless network.</p> <p>6.11 Smart Phone and discuss its features indicate through Block diagram.</p>	<p>03/05/2023 & 04/05/2023</p> <p>06/05/2023</p> <p>08/05/2023</p> <p>09/05/2023</p> <p>10/05/2023 & 11/05/2023</p> <p>12/05/2023 & 13/05/2023</p> <p>15/05/2023</p> <p>16/05/2023</p> <p>17/05/2023</p> <p>18/05/2023 & 20/05/2023</p> <p>22/05/2023</p>	
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