

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 601 ANTENNA AND WAVE PROPAGATION

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
3	0	2	100	03	25	25	150

1. **Basic antenna concepts** : Various definitions, antenna parameters, transmission formula, sources of radiation , comparison between antennas & transmission lines.
2. **Point sources**: Power patterns of various sources , radiation intensity, directivity, beam width, sources with pattern of arbitrary shape, gain, field and phase patterns.
3. **Arrays of point sources** : Arrays of 2 isotropic point sources, nonisotropic point sources, principles of pattern multiplication, linear arrays of non-isotropic point sources of equal amplitude & spacing, broad side, end fire arrays, radiation pattern determination of linear arrays, schelkunoff theorems for linear arrays, Adolph-Tchebysheff distribution for linear arrays.
4. **Electric dipole and thin layer antennas** : Short electric dipole radiation of a short dipole, various field Components radiation patterns, radiation resistance of linear antenna, radiation resistance of half wave Dipole, quarter wave dipole.
5. **Loop antenna** : Small loop short magnetic dipole, comparison of far field of small loop and short dipole loop antennas, field pattern of circular loop antenna & its radiation resistance.
6. **Helical antenna** : Helical geometry, transmission radiation modes, practical design consideration, wide band ckt of helical antenna.
7. **Arrays of dipoles & apertures** : Horizontal antennas and vertical antennas above a ground plane, Arrays with parasitic elements, freq. Scanning arrays, retro arrays, adaptive arrays & smart antennas Long wire antennas, location methods of feeding antennas, folded dipole antennas.
8. **Reflector antennas & feed systems** : Plane sheet reflectors & diffraction, corner reflectors, reflector, paraboloid aperture distribution & efficiencies, off axis operation of parabolic reflectors, cassegrain feed of other reflector antennas.
9. **Slot horn & complementary antennas** : Slot antennas, its pattern, principle & complementary Antennas, independence of slot antennas & various types of horn antennas.
10. **Lens antennas** : Dielectric lens, reflector lens antennas, polaroid.
11. **Broadband & Freq. Independent antennas** : Broadband antenna, Freq. Independent antenna, Log periodic antennas, yagi-uda, corner log periodic arrays.
12. **Antennas for special applications** : Sleeve, turnstile, upper turnstile antenna, matching Arrangements Micro strip antennas, high gain coms, submerge antennas, antennas design consideration for satellite communication.
13. **Antennas measurement** : Measurement of pattern, gain, phase, polarization, impedance, current distribution.
14. **Radio wave propagation** : Mode of propagation, definition, hop propagation.

BOOKS :

1. Antennas by J.D.Krauss, McGraw Hill.
2. Electromagnetic wave & radiating systems by Jordan & Balmain, PHI
3. Antennas & wave propagation by K.D.Prasad.

BHAVNAGAR UNIVERSITY
B.E. SEM VI EC (w.e.f. July 2007)
EC-602 MICROPROCESSOR – II

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEOR Y HOUR	TUT. HOUR	PRAC. HOUR	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOUR			
4	-	2	100	3	25	25	150

1. **8086 MICROPROCESSOR** : Detailed study of internal architecture of 8086, Register organization, Bus interface unit, Execution unit, Queuing, Address calculation, Minimum mode & maximum mode system, Minimum system mode interface , Maximum system mode interface, system clock, Bus cycles, Instruction and execution sequence.

2. **8086 MICROPROCESSOR PROGRAMMING** : Software Model of 8086 microprocessor, Assembly language and Machine language, Addressing modes, Instruction set, Data transfer, Arithmetic, Logic, Shift, Rotate, instruction, Flag control instruction compare instruction, Jump instruction, subroutine handling instruction Loop instruction string instruction.

3. **MEMORY INTERFACING** : Block diagram, Hardware organization of memory address space , Bus status codes, control signals, Read & write Bus cycles, stack, stack segment register and stack pointer, De multiplexing the address/ Data Bus 4k word program storage memory, 1K word static RAM Data storage memory, 128 K Byte Dynamic RAM subsystem.

4. **INPUT/OUTPUT/ INTERFACE** : Introduction, I/O Address space and data transfer, Input/output instruction & Bus cycles, Eight Byte wide output ports, 8255 implementation of parallel I/O ports, Memory- Mapped I/O. Analog & digital interfacing using A/D & D/A converter, design of microprocessor based system

5. **INTERRUPT INTERFACE** : Types of interrupts, interrupt address pointer table, interrupt instructions, Masking of interrupts , External hardware interrupt interface & sequence , 8259 programmable interrupt controller Minimum & maximum mode system interrupt interface using the 8259 A, software interrupts, Non-maskable & Reset interrupt, internal interrupt functions.

6. **INTRODUCTION TO MICROCONTROLLER** : Study of architecture of 8031/ 8051 Micro controller, instruction set, Addressing modes, programming & interfacing, design of micro controller based system.

BOOKS :

1. 16 bit Microprocessor Architecture, software and interface techniques By Walter A Triebel & Avatar Sigh (PHI)
2. Microcomputer systems : The 8086/ 8088 family architecture, programming and Design By Yu-cheng Liv, & Glenn A Gibson. (PHI)
3. The 8086 / 8088 Family : Design, programming and interfacing By John uffenbeck (PHI)
5. Microprocessors And interfacing programming and Hardware By Douglas V Hall (TMH)
6. The Intel Microprocessors 8086/ 8088, 80286, 80386, and 80486 By Barry B Bray (PHI)
7. Intel Reference Manual for 8031/ 8051 Micro controller.
8. Advance Microprocessors & Peripherals by A K Ray & K M Bhur chandi.
8. MICROCONTROLLER BY AYALLA

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 603 DIGITAL COMMUNICATIONS

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
4	0	2	100	03	25	25	150

1. Review of Digital Modulation Technique

2. **Data Transmission:** Abaseband signal receiver, Probability of error. The optimum filters, white noise the matched filters, Probability of error of match filter, coherent reception correlation , PSK, FSK, Noncoherent detection of FSK, Differential PSK, QPSK.

3. **Noise in pulse code and Delta Modulation system :**PCM transmission, calculation of Quantization noise, The out put signal power, the effect of thermal noise, out put S/N calculations in PCM, Delta Modulation, Quantization noise in delta modulation ,The output signal power, delta modulation output, Signal to Quantization Noise ratio, delta pulse code modulation, The effect of thermal noise in delta modulation, out put signal to noise ratio in delta modulation.

4. **Information Theory :** Discrete messages, The concept of amount of information Average information, Entropy, Joint Entropy, conditional Entropy, Information rate, Mutual information, coding to increase average information , Shannon's theorem, channel capacity, Symmetric channel, BSC, Cascaded channel, Binary Erasure channel, capacity of a Gaussian channel, BW, S/N trade off, Use of orthogonal signals to attain Shannon's limit, Efficiency of orthogonal signals transmission.

5. **Coding :** Introduction, coding efficiency, shannon-fano coding, Huffman coding, error control coding, parity check bit coding, error detection coding, Block codes, Upper bond of probability of error with coding, Block codes coding & decoding ,Burst error correction, convolution coding, Examples of various types of coding techniques.

6. **ISDN :** Introduction, History, services, subscriber access to ISDN , BDH channel etc., ISDN layers, Broad band , ISDN futures.

7. **DIGITAL DATA TRANSMISSION :** Interfaces and Modem Digital data transmission, DTE – DCE interface, other interface standard, Modem.

Books:

1. Principal of communication systems – Taub schilling (second Edition) McGraw - Hill International
2. Communication systems By R.P.Singh & S.D. Sapre (TMH)
3. Digital & Analog com. System By B.P. Lathi
4. Digital communication By pruakis
5. Data communication & Networking by Behrouz A forouzan TMH.

Practical and Termwork will be based upon the above syllabus.

BHAVNAGAR UNIVERSITY
B.E. SEMESTER VI (E.C.) w.e.f. July 2007
EC- 604 DATA COMMUNICATION AND NETWORKING

TEACHING SCHEME			EXAMINATION SCHEME				TOTAL MARKS
THEORY HOURS	TUT. HOURS	PRACT. HOURS	THEORY		PRA/ORAL MARKS	T/W MARKS	
			MARKS	HOURS			
4	0	2	100	3	25	25	150

- 1. INTRODUCTION OF DATA COMMUNICATION AND NETWORKING:** Data communication. Networks, Network criteria, Physical structure, topologies, categories of networks and protocols. Organization and functions of OSI MODEL and INTERNET MODEL layers.
- 2. PHYSICAL LAYER:** Transmission medias. Serial and parallel transmission. Circuit, packet and message switching. Modems, 56 K Modems, DSL technology and Cable modems. Telephone networks and SONET.
- 3. DATALINK LAYER:** Data Link Control and Protocols:- Flow and Error control, Stop and Wait ARQ, Go-Back-N ARQ, Selective repeat ARQ and HDLC. Point to point Protocol (PPP). Multiple Access:- Random access ALOHA, CSMA, CSMA/CD and CSMA/CA. Controlled Access Reservation, Polling and Token passing. Channelization Access FDMA, TDMA and CDMA. Local Area Networks: Traditional Ethernet, Token Bus, Token Ring, FDDI, Fast Ethernet and Gigabits Ethernet. Wireless LANs. Virtual Circuit switching: Frame Relay and ATM
- 4. NETWORK LAYER:** Internetworking, Addressing and routing. Network layer protocol: ARP, RARP, IP, ICMP, IGMP and IPv4, IPv6, ICMPv6. Unicast and Multicast Routing and Protocols.
- 5. TRANSPORT LAYER:** Process to Process delivery, UDP and TCP Protocol, Congestion control and quality of services.
- 6. NETWORKING AND INTERNETWORKING DEVICES:** Hub, Switches, Repeater, Bridges, Router, Gateway, Multi protocol Router and Routers
- 7. APPLICATION LAYER:** Client-Server model, Socket interface. DNS, DDNS, SMTP and FTP, HTTP and WWW. VOIP.
- 8. SECURITY:** Cryptography, Symmetric key and Public key Cryptography

TEXT BOOK:-

1. DATA COMMUNICATION AND NETWORKING BY BEHRAUZ & FOROUZAN (TMH)

REFERENCE BOOKS :

1. COMPUTER NETWORKS A.S. TANENBAUM (PHI)
2. DATA COMMUNICATION WILLIAM L. SCHWEBER McGraw – Hill
3. DATA & COMPUTER COMMUNICATION WILLIAM STALLING MACMILLAN
4. COMPUTER COMMUNICATION & NETWORKS JOHN FREER (AFFILIATED EWP)

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 605 ANALOG FILTER DESIGN

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
3	0	2	100	03	25	25	150

- Introduction** : The circuit Design problem, Kinds of Filters and Descriptive Terminology, Analog filters, some choices, Magnitude & frequency scaling.
- Bilinear Transfer functions and frequency Response** : Bilinear Transfer functions, parts of T (jw) Classification of Magnitude Response, Classification of phase Response, Bode plots, Design.
- Cascade Design with First order circuits** : cascade circuits, Inverting operational Amplifier Circuits, Noninverting operational amplifier circuits, cascade design, The All pass circuit : phase shaping.
- The Biquad circuit** : The design paramaters Q and w, The Biquad circuit, frequency Response of the Biquad circuit, The four op- amp biquad circuit, phase response of the biquad circuit.
- Butterworth Lowpass filters** : The ideal lowpass filter, Butterworth response, butterworth poleLocations, Lowpass filter specifications, sallen and key circuit, Resistive Gain enhancement, RC-CR Transformation.
- Butterworth Bandpass filters** : A frequency Transformation, Geffe Algorithm, Finding n , Bandpass Back to Lowpass, Delyiannis –friend circuit, stagger Tuned Bandpass filter design, Q Enhancement of the friend circuit.
- The caebyshev Response** : Lissajous figures, chebyshev Magnitude Response, Location of the chebyshev poles, Guillemin’s Algorithm, comparison of the Butterworth and chebyshev Response, chebyshev filter design.
- Sensitivity** : Definition of Bode sensitivity , sensitivity analysis of the sallen key circuit, sensitivity comparisons of Three circuits , Mannitude of (jw) sensitivity.
- Delay filters** : Time delay and Transfer functions, Bessel –Thomson Response, Bessel polyno-mials Further comparisons of Response, Design of Bessel – Thomson filters.
- Frequency Transformations** : prototype response and its Transformation,prototype of Bandpass revisited, Foster Reactane functions, Highpass and Bandstop cases, Transformationsof LC circuits, Multiple pass-band Transformations.
- Highpass and Band –Ellimination Filters** : Lowpass to Highpass Transformation, pole Reciprocation, Band Elimination (Notch) filters, pole and zero Locations for Band Elimination case, The Notch Respomse generalized, Notch circuits, Band Elimination filter design, other Useful circuits. Prototype and frequency Transformed Ladders : Some prooperties of Lossless, Ladders, A synthesis strategy, Tables for other Transformation Response, Frequency Transformation Ladders, Passive filter design, sensitivity of Doubly Terminated Ladders.

BOOKS :

- Analog Filter Design – M. E. Van vallkenburg.

BHAVNAGAR UNIVERSITY
B.E. SEMESTER V (E.C.) w.e.f. July 2007
E.C. – 606 SEMINAR

Teaching scheme			Examination scheme				Total Marks
Theory Hours	Tut. Hours	Pract. Hours	Theory		Pra/Oral Marks	T/W Marks	
			Marks	Hours			
0	0	2	00	00	25	25	50

Student is required to go to library and search the material from journals and reference books to Prepare (under the guidance of teacher) comprehensive report on a particular recent development In the field of electronics or to expand the particular topic learnt with the details not covered in class.

He/she is required to submit and defend his/her work by oral examinations.

Get information from different sites in internet.