

# Chhattisgarh Swami Vivekanand Technical University, Bhilai

## Scheme of Teaching and Examination

### B.E. VI Semester Electronics & Telecommunication Engineering

Sl. No.	Board of Study	Code No.	Subjects	Period Per Week			Scheme of Exam			Total Marks	Credit L+(T+P)/2
				L	T	P	Theory/ Practical				
							ESE	CT	TA		
1	Electronic & Telecom.	328611 (28)	Communication Hardware Design	3	1	-	80	20	20	120	4
2	Electronic & Telecom.	328612 (28)	Advanced Electronic Circuits	3	1	-	80	20	20	120	4
3	Electronic & Telecom.	328613 (28)	Advanced Microprocessor & Interfacing	3	1	-	80	20	20	120	4
4	Electronic & Telecom.	328614 (28)	Digital Signal Processing	3	1	-	80	20	20	120	4
5	Electronic & Telecom.	328615 (28)	Communication System - II	3	1	-	80	20	20	120	4
6	Refer Table -1		Professional Elective -I	3	-	-	80	20	20	120	3
7	Electronic & Telecom.	328621 (28)	Advanced Electronic Circuits Lab	-	-	2	40	-	20	60	1
8	Electronic & Telecom.	328622 (28)	Advanced Microprocessor & Interfacing Lab	-	-	4	40	-	20	60	2
9	Electronic & Telecom.	328623 (28)	Digital Signal Processing Lab	-	-	4	40	-	20	60	2
10	Electronic & Telecom.	328624 (28)	Communication System - II Lab	-	-	4	40	-	20	60	2
11	Management	300625 (36)	Managerial Skills	-	-	2	-	-	40	40	1
12			Library	-	-	1	-	-	-	-	-
<b>TOTAL</b>				<b>18</b>	<b>5</b>	<b>17</b>	<b>640</b>	<b>120</b>	<b>240</b>	<b>1000</b>	<b>31</b>

L-Lecture, T- Tutorial, P - Practical, ESE- End Semester Examination, CT - Class Test, TA - Teacher's Assessment

Note :- Industrial Training of twelve weeks is mandatory for B.E. students. It is to be completed in two equal parts. The first part must have been completed in summer after IV sem. The second part to be completed during summer after VI sem. after which students have to submit a training report which will be evaluated by college teachers during B.E. VII sem.

**Table -1**  
**Professional Elective - I**

**Telecommunication Group:**

Sl. No.	Board of Study	Code	Subject
1	Electronics & Telecom.	328631 (28)	Telecommunication Switching Circuits & Networks
2	Electronics & Telecom.	328632 (28)	Computer Network

**Allied Group:**

Sl. No.	Board of Study	Code	Subject
1	Electronics & Telecom.	328633 (28)	Medical Electronics
2	Electronics & Telecom.	328634 (28)	Principles of Management
3	Electronics & Telecom.	328635 (28)	Active Network Synthesis
4	Electronics & Telecom.	328636 (28)	Computer Organisation & Architecture
5	Electronics & Telecom.	328637 (28)	Advanced Semiconductor Devices

Note (1)- 1/4th of total strength of students to minimum of twenty students is required to offer an elective in the college in a particular academic session

Note (2) - Choice of elective course once made for an examination cannot be changed in future examinations.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester : VI  
Subject: Communication Hardware Design  
Total Theory Periods: 40  
Total Marks in End Semester Examination: 80  
Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication  
Code: 328611 (28)  
Total Tutorial Periods: 12

## **UNIT – I**

**AM Generation:** Methods of AM generation: Detailed Analysis of Class - C Tuned Amplifiers Linear shunt plate modulation, Linear series plate modulation, Grid-bias modulation, cathode modulation suppress grid modulation, screen grid modulation, collector modulation.

## **UNIT – II**

**AM Transmitters:** Classification of Radio transmitters, Carrier Frequency Requirements, Master Oscillator, frequency Synthesizers, Harmonic Generators, Radio Broadcast Transmitters, Radio Telephone Transmitters, Peak Limiters, Peak Clippers, Volume Compressors, VODAS, Privacy Devices in Radio Telephony, Broad band Techniques, FDM and TDM Hierarchy, SSB Transmitters, Suppression of Radiation from Radio Transmitters.

## **UNIT – III**

**AM Receivers:** Classification, Principle of AM Radio Receivers, TRF receivers; Practical TRF Receivers, Super heterodyne Receivers, Characteristics of Ideal Receiving Aerials, Receiving, RF Amplifier Stage, Image Signal Rejection, Receivers Noise, frequency Converter stage, Square LAW and Generalized Conversion Theory's, Frequency mixers, Tracking and Alignment of Receivers for single dial Tuning, IF Amplifier, detector and AGC Circuits, Tone Compensated Volume Control, Tuning Control, Band-Spread Tuning. Noise Limiter, AFC, Code Reception, SSB Receivers, Volume Expanders, Diversity Reception- Space and Frequency Diversity MUSA System.

## **UNIT – IV**

**FM Transmitters and Receivers:** Classification: Capacitive and Reactance Tube Modulator, Reactance Tube Modulators using RL Circuits, FETS and Transistors, distortion in Reactance Tube Modulators, Reactance Tube FM Transmitters, Pre-emphasis and De-Emphasis Circuits; Frequency Drift and Stabilization techniques, Push-pull reactance Tube Modulation, Armstrong transmitters. Types of Limiters, Classification of FM Detectors-Slope Detector, Stagger Tuned Detector, Center Tuned Discriminator, Design Requirements for Foster Seeley Discriminator, Ratio Detector

## **UNIT – V**

**TV Transmitters and Receivers:** Principles of TV: Aspect ratio, Persistence of vision and flicker, vertical and horizontal resolution, scanning, Composite video signal, video and sound modulation, Block diagram of TV transmitter and receiver (Monochrome)

### **Name of Text Book:**

1. Radio Engineering , G.K. Mithal, Khanna Publishers,
2. Monochrome Television Engg, R.R. Gulati, New Age Intl. Publishers

### **Names of Reference Books:**

1. Electronics Communication System, George Kennedy, McGraw Hill; ISE.
2. Principles of Carrier Communication, N.N. Biswas; Wiley Eastern
3. J. Smith, Modern Communication Circuits, McGraw Hill.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VI  
Subject: Advanced Electronic Circuits  
Total Theory Periods: 40  
Total Marks in End Semester Examination: 80  
Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication  
Code: 328612 (28)  
Total Tutorial Periods: 12

## **Unit – I**

**Digital to Analog and Analog to Digital Converters:** D/A Converter using Binary Weighted Resistor Network and R-2R Ladder Network; Inverted Ladder Network; D/A Specification ; Analog Switches ; Sample & Hold Circuits ; Analog Multiplexers, Parallel Comparator type A/D Converter, Successive Approximation A/D Converter, Counting & Dual Slope A/D Converter, A/D Converter using Voltage to Frequency and Voltage to Time Conversion, Delta Modulation type A/D Converter.

## **Unit – II**

**Principles of Active Filters:** Bilinear Transfer Function, Parts of  $T(j\omega)$  , Classification of Magnitude and phase Response ,Design. Cascading; Inverting and Non-inverting OP –AMP Circuits; Cascade Design : All pass Circuits. Biquadratic Transfer Function; Design parameters Q and  $\omega_0$ ; Biquad Circuit and its Frequency Response ; Four op-amp Biquad and its Frequency Response.

## **Unit – III**

**Special Active Filters:** Design of Low –pass Butterworth Filters; Sallen –key Circuits.; RC-CR Transformation ; Deyliannis -Friend's Circuits : Stagger-Tuned Bandpass Design. Design of Low –pass Chebyshev Filters; Design of Notch Filters; Equalizer Circuits. Sensitivity concepts and their Application to Sallen–key Circuits.

## **Unit – IV**

**Phase Locked Loops:** Voltage Controlled Oscillator; Functional Diagram and Principle of Operation of 565; Transfer Characteristics; Measurement of Lock and Capture Range; Application of PLL.

## **Unit – V**

**Analog Multipliers and Dividers:** Characteristics; Parameters: Basic Method of Performing Analog Multiplication; Monolithic Multiplier Circuit Realization; Divider Circuit: Square Rooting Circuit: Multiplier Application.

### ***Name of Text Books:***

1. Analog Filter Design; Van –Valkenburg ; Holt –Standers International Edn.
2. Integrated Circuits: K. R. Botkar, Khanna Publications

### ***Name of Reference Books:***

1. Operational Amplifiers and Linear Integrated Circuits, Coughlin and Driscoll, 6<sup>th</sup> Ed., PHI
2. Linear Integrated Circuits, Roy Choudhury and Jain, 2<sup>nd</sup> Ed., New Age International Publishers.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester : VI**

**Subject: Advanced Microprocessors & Interfacing**

**Total Theory Periods: 40**

**Total Marks in End Semester Examination: 80**

**Minimum number of Class tests to be conducted: Two**

**Branch: ET&T/AEI/EI/EEE**

**Code: 328613 (28)**

**Total Tutorial Periods: 12**

## **Unit – I**

**Architecture & Instruction set for 8086:** Architecture and pin configuration of 8086, Instruction Format; Addressing modes, Data Transfer Instruction; Arithmetic Instructions; Branching and Looping Instructions, NOP and Halt, Flag Manipulation Instructions; Logical, Shift and Rotate Instruction. Byte and String Manipulation: String Instructions; REP Prefix, Table Translation, Number Format conversions. Assembler Directives and Operators; Assembly Process; Translation of assembler Instructions. Programming of microprocessor 8086

## **Unit – II**

**System Bus Structure:** Basic 8086/8088 system bus architecture, Minimum mode Configuration, Maximum mode configuration; memory interfacing with 8086/8088 in minimum and maximum mode; System Bus Timings, Bus Standards. Interrupts of microprocessor 8086

## **Unit – III**

**Architecture of Interfacing Devices:** Programmable interrupt controller (PIC) 8259, Programmable DMA Controller (8257). (*Architecture and Functioning only*) 8-bit ADC and DAC, Programming for Interfacing of 8253/8254, 8251, 8279, ADC and DAC with 8086.

## **Unit – IV**

**Architecture of 32 bit Microprocessors:** Intel 80386 Architecture –Special 80386 Registers –Memory management – interrupts and exceptions – management of tasks –Real, protected and virtual 8086 mode-Introduction to 80486 microprocessor – Architecture – Comparison with 80386 processor. Introduction to RISC and CISC Processor

## **Unit – V**

**Multiprocessor Architecture & Programming:** Numeric data Processor 8087; I/O Processor 8089, Communication between CPU and IOP, Related Instructions; programming of 8087 numeric data processor.

### **Name of Text Books:**

1. Microcomputer Systems: 8086/8088 Family - Architecture, Programming, and Design; Y. Liu and G. A. Gibson, 2<sup>nd</sup> Ed., PHI.
2. Microprocessor & Interfacing– D. Hall, TMH

### **Name of Reference Books:**

1. The 8086 Microprocessor: Programming & Interfacing the PC, Kenneth J. Ayala, Penram International Publishing (India).
2. The Intel 8086/8088 Microprocessor Architecture, Programming Design & Interfacing – B.S. Chhabra, Dhanpat Rai Publishing Company.
3. The Intel Microprocessor 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium & Pentium Pro Processor: Architecture, Programming & Interfacing– Brey & Sharma, Pearson Education.
4. Advanced microprocessor, Rajasree, New Age International Publishers

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester : VI  
Subject: Digital Signal Processing  
Total Theory Periods: 40  
Total Marks in End Semester Examination: 80  
Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication  
Code: 328614 (28)  
Total Tutorial Periods: 12

*Introduction to DTFT, DFT, FFT, Wavelets, ROC of signals (Already covered in Signals & Systems in IV semester)*

## **UNIT – I**

**Realization of Systems:** Realization of digital linear system, Signal flow graph. IIR & FIR Structure. MATLAB Programming for realization of IIR & FIR Structure Only.

## **UNIT – II**

**Infinite Impulse Response Filter design (IIR):** Analog & Digital Frequency transformation. Designing by impulse invariance & Bilinear method. Butterworth and Chebyshev Design Method.

## **UNIT – III**

**Finite Impulse Response (FIR) Filter Design:** Rectangular, Triangular, Hamming, Blackman & Kaiser window. Linear Phase and Optimal Filter.

## **UNIT – IV**

**Multirate DSP:** Introduction, Sampling Rate Conversion, Decimation of Sampling rate by an Integer factor, Interpolation of sampling rate by an Integer Factor, Sampling rate alteration or conversion by a rational factor. Filter design and implementation for sampling rate alteration or conversion: Direct form FIR digital filter structures, Polyphase filter structure, Time varying digital filter structures. Sampling rate conversion by an arbitrary factor: First order approximation & Second order approximation method. Applications of Multirate Digital Signal Processing (MDSP).

## **UNIT – V**

**Applications of Digital Signal Processing:** Introduction, Applications of DSP: Digital Sinusoidal Oscillators, Digital Time Control Circuits, Digital Comb Filters. Applications in broader sense: Removal of noise from pictures, Applications of DSP to Radar, Applications of DSP in Image Processing, Applications of DSP in speech processing.

### ***Name of Text Books:***

1. Digital Signal Processing, J. Johnson, Pearson - PHI
2. Digital Signal Processing, Proakis, Manolakis & Sharma, Pearson Education

### ***Name of Reference Books:***

1. Digital Signal Processing, Nair, PHI
2. Discrete Time Signal Processing, Oppenheim & Schaffer, Pearson - PHI
3. Digital Signal Processing, Vallavaraj, Salivahanan, Gnanapriya, TMH
4. Digital Signal Processing by Hussain, Umesh Publications.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VI  
Subject: Communication System - II  
Total Theory Periods: 40  
Total Marks in End Semester Examination: 80  
Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication  
Code: 328615 (28)  
Total Tutorial Periods: 12

## **UNIT – I**

**Pulse Modulation:** Sampling theorem, sampling and reconstruction using Impulse train; Sampling and reconstruction using pulse train; Basic principles of PAM, PWM and PPM, their generation and detection. TDM, comparison of TDM with FDM; Typical multiplexed systems; Signal –to-noise ratio calculations for PAM, PWM and PPM and their comparisons.

## **UNIT-II**

**Pulse Code Modulation:** Pulse code modulation, generation and detection of PCM, quantization, companding, A-Law and  $\mu$ -Law, differential PCM; Delta modulation, Adaptive delta modulation; Signal-to-Noise Ratio calculations of PCM, DM and TDM-PCM, their comparisons.

## **UNIT-III**

**Digital Modulation Techniques:** Fundamentals of Binary ASK, PSK and FSK, generation and detection of BASK, BPSK and BFSK; Fundamentals of QPSK and DPSK, generation and detection of QPSK and DPSK, generation and detection of QPSK and DPSK, MSK, M-Ary PSK signaling schemes, equalization principles; Optimum Filter, Matched Filter, Error Probability of Various digital modulation Technique.

## **UNIT – IV**

**Noise and Spread Spectrum Modulation:** Noise in PCM-DM., Calculation of S/N ratio for PCM and DM, Comparison of PCM and DM. Spread Spectrum technique. DS and Frequency hopping Spread Spectrum technique, CDMA.

## **UNIT – V**

**Information Theory and Coding:** Information; Marginal, conditional and joint Entropies; Channel capacity, efficiency; Discrete communication channels; Shannon's limit, continuous communication channels, Channel with finite memory. General principles of coding, necessary and sufficient condition for noiseless coding, Shannon's noiseless coding theorem, Coding efficiency, Shannon-Fano and Huffman coding; Error control, Hamming codes, Linear block codes, Cyclic Redundancy codes, Majority logic coding and decoding; Two dimensional coding, Algebraic coding, Trellis diagram.

### ***Name of Text Books:***

1. Principles of Communication Systems –Taub and Shilling, Tata Mc Graw Hill.
2. Communication Systems–Simon Haykins. Tata McGraw Hill

### ***Name of Reference Books:***

1. Principles of Digital Communication Systems, B.P. Lathi, PHI International publications.
2. A Text Book of Analog & Digital Communication – P. Chakrabarti, Dhanpat Rai & Co.
3. Principles of Digital Communications, Das, Mullick and Chatterjee, Wiley Eastern Publications.
4. Advanced Digital Communication Systems, NIIT, PHI

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VI  
Subject: Telecommunication Switching Circuits  
& Networks)  
Total Theory Periods: 40  
Total Marks in End Semester Examination: 80  
Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication  
Code: 328631 (28)

Total Tutorial Periods: Nil

## **UNIT – I**

**INTRODUCTION:** Evolution of Telecommunication, Basics of Switching, Strowger switching System, Cross-bar switching, Electronic Space division switching.

## **UNIT – II**

**TELEPHONY EQUIPMENT:** Speech digitization & transmission, Time division switching, Optical fiber System: Types of fiber, fiber optic transmission, optical source, optical detectors.

## **UNIT – III**

**TELEPHONE NETWORK MANAGEMENT:** Traffic Engineering, Telephone Network: Subscriber loop system, switching hierarchy & routing. Transmission plan, Transmission System, Numbering Plan, Charging plan, Signaling Technique, In-Channel signaling.

## **UNIT – IV**

**DATA THROUGH TELEPHONE NETWORKS:** Data transmission in PSTNs, Switching technique for Data transmission, Data communication Architecture, Link-to-Link Layers, End-to-End Layers, Satellite Based Data Network.

## **UNIT – V**

**ISDN:** Motivation for ISDN, New services, Network and Protocol Architecture, Transmission Channel, User-Network interface, Signaling, Numbering & Addressing, Service characterization, ISDN standards.

### ***Name of Text Books:***

1. Telecommunication Switching and Network, Thyagarajan and Viswanathan - PHI
2. Telecommunication Switching and Networks, P. Gnanasivam, New Age International Publishers

### ***Name of Reference Books:***

1. Data and Computer Communications, William Stalling; Pearson Education.
2. Telecommunication Switching, Traffic and Networks, Flood, Pearson Education

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester : VI**

**Subject: Computer Network**

**Total Theory Periods: 40**

**Total Marks in End Semester Examination: 80**

**Minimum number of Class tests to be conducted: Two**

**Branch: Electronics & Telecommunication**

**Code: 328632 (28)**

**Total Tutorial Periods: nil**

## **UNIT – I**

**NETWORK TOPOLOGIES AND PHYSICAL LAYER:** Transmission modes, Categories of network, The OSI model, DTE-DCE interface, Null Modem, OSI Physical Layer Components, FSK and PSK Modems, Balanced Modulator, V.34 and V.90 Modems

## **UNIT – II**

**NETWORK TOPOLOGIES AND PHYSICAL LAYER:** Basics of - Data Link Layer: Flow Control: Stop & Wait, Sliding Window, Error control: CRC, ARQ, Stop & Wait ARQ, Sliding Window ARQ, HDLC.

## **UNIT – III**

**LOCAL AREA NETWORKS:** Basics of - IEEE802.1, LLC, MAC, PDU; ETHERNET: Access Method: CSMA/CD, Addressing, Electrical Specification, Frame format, Implementation, Switched Ethernet, Fast Ethernet, Gigabyte Ethernet; Token Bus; Token Ring; FDDI; Wireless LAN-IEEE802.11.

## **UNIT – IV**

**OTHER OSI LAYERS:** Basics of - Network Layer, Transport Layer, Session Layer, Presentation Layer, Application layer; Principles of Internetworking, Internet Protocol: IP Addresses, Transport services, TCP services, TCP Header format.

## **UNIT – V**

**HIGH SPEED NETWORKS:** Basics of – High Speed LAN, Fast Ethernet systems, Gigabit Ethernet, FDDI, 100VG – AnyLAN

### ***Name of Text Books:***

1. "Data Communication and Computer Networking", B.A. Forouzan, Tata McGraw Hill, 2nd Edition.
2. "Data and Computer Communications", William Stallings; Pearson Education.

### ***Name of Reference Books:***

1. "Understanding Data Communications & Networks", William A. Shay, 2nd, Ed., Thomson-Vikas
2. "Computer Networks – A Systems Approach", LL Peterson & BS Davie, 3<sup>rd</sup> Ed., Elsevier
3. "Computer Networks – Fundamentals and Applications", Rajesh, Easwarakumar, Balasubramanian, Thomson-Vikas
4. "Data and Network Communications", Michael A. Miller, Thomson-Vikas

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester: VI  
Subject: Medical Electronics  
Total Theory Periods: 40  
Total Marks in End Semester Examination: 80  
Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication  
Code: 328633 (28)  
Total Tutorial Periods: Nil

## **UNIT – I**

**Man Instrument System:** Introduction to Man-Instrument System, Components of Man-Instrument System, Physiological System of the Body, Problems Encountered in Measuring a Living System.

## **UNIT – II**

**Bio Electric Potential:** Sources of Bioelectric Potential, Bio Electrodes, Cardiovascular Measurements: The Heart and Cardiovascular System, Electrocardiography.

## **UNIT – III**

**Measurements of Biological Parameters:** Measurement of Blood Flow, Measurement of Heart Sound, Measurement of Temperature, Ultrasonic Diagnosis.

## **UNIT – IV**

**Patient Care and Monitoring:** The Elements of Intensive Care Monitoring, Pacemakers, Defibrillators, Electrical Safety of Medical Equipment.

## **UNIT – V**

**Biotelemetry:** Introduction, Physiological parameters Adaptable to Biotelemetry, The components of a Biotelemetry System, Implantable Units, Applications of Telemetry in Patient care.

### ***Name of Text Books:***

1. Biomedical Instrumentation & Measurement by L. Cromwell, F.J. Weibell and E.A. Pfeiffer, 2<sup>nd</sup> Ed., PHI
2. Principles of Medical Electronics & Biomedical Instrumentation, C Raja Rao & S.K Guha, University Press

### ***Name of Reference Books:***

1. Electronics in Medicine and Biomedical Instrumentation – Nandini K. Jog, PHI
2. Biomedical Instrumentation – Dr. A. Arumugam, Anuradha Agencies, Chennai.
3. Handbook of Biomedical Instrumentation by R.S. Khandpur, TMH Pub. Co.
4. Introduction to Biomedical Engineering, Domach, Pearson Education

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester : VI**  
**Subject: Principles of Management**  
**Total Theory Periods: 40**  
**Total Marks in End Semester Examination: 80**  
**Minimum number of Class tests to be conducted: Two**

**Branch: Electronics & Telecommunication**  
**Code: 328634 (28)**  
**Total Tutorial Periods: Nil**

## **UNIT - I**

**Introduction to Management Science:** Nature and Significance of management. The evolution of management thought; Approaches of management, administrative management, New-classical school; modern organizational theories; system contingency approach. Social responsibility of managers.

## **UNIT - II**

**Planning:** significance, objectives, types of plans, strategies, policies, proceedings, methods & rules, project management, planning evaluation, feasibility report, planning process, major as a key step in planning, Planning under systems approach.

## **UNIT - III**

**Organization:** Significance, objectives, major approaches to organization theory; principles of organization the organization process, span of control or supervision departmentation, Delegation & decentralization determinants of effective organizing, staffing, selection, appraisal and development of managers.

## **UNIT - IV**

**Directing:** issue in managing human factors. Motivation, nature and significance, theories and techniques. Communication, definition & significance, the process and barriers; Building effective communication system, supervision; nature and function, determination of effective supervision.

**Controlling:** definition and elements. Control techniques, co-ordination, and determinants of an effective control system.

## **UNIT - V**

**Techniques of Management:** Management by Objectives (MBO), Paternalistic management by exception, management by participation.

### ***Name of Text Books:***

1. Essentials of Management, Koontz & Weinrich
2. Management, Stoner, Freeman & Gilbert

### ***Name of Reference Books:***

1. Principles of Management & Administration, Bose, C., PHI
2. Principles of Management, Govindarajan M., Natarajan, PHI

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

Semester : VI

Subject: Active Network Synthesis

Total Theory Periods: 40

Total Marks in End Semester Examination: 80

Minimum number of Class tests to be conducted: Two

Branch: Electronics & Telecommunication

Code: 328635 (28)

Total Tutorial Periods: Nil

## **UNIT – I**

**Network Function and Parameters:** Magnitude Function, Phase and Group Delay function, Circuit Realization, Lossless Network with single termination, lossless two port network with termination at both ends.

## **UNIT – II**

**Filter approximation:** Butterworth, Chebyshev frequency and network transformation, pole and zero sensitivities, network function sensitivities.

## **UNIT – III**

**Network Design:** Gyrator, General impedance converter (GIC), Frequency dependent negative resistor (FDNR), UI two port network, Mathew's configuration, lossless ring's method, Mitra's method.

## **UNIT – IV**

**Network Realization:** Direct and Cascaded realization, State variable realization of an active Rbiquad circuit, KRC Filter, Multiple feedback filters.

## **UNIT – V**

**Effect of op-amp non-idealities:** Pole frequency and Q error problems – analysis with finite open loop gain of opamp, active and passive compensation, the Akerberg- Mossberg biquad.

### **Name of Text Books:**

1. Active Network Synthesis, A. Lam
2. Analog Filter Design, Valkenburg, Oxford University Press

### **Name of Reference Books:**

1. Design with OPAMP, Sergio Franco, TMH
2. G Daryanani : *Principles of Active Network Synthesis and Design*, John Wiley.
3. A S Sedra and P O Brackett: 'Filter Theory and Design: Active and Passive', Matrix Publishers.
4. Rolf Schaumann and M E Van Valkenberg: Active Filter Design, Oxford University Press.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester : VI**

**Subject: Computer Organization & Architecture**

**Total Theory Periods: 40**

**Total Marks in End Semester Examination: 80**

**Minimum number of Class tests to be conducted: Two**

**Branch: Electronics & Telecommunication**

**Code: 328636 (28)**

**Total Tutorial Periods: Nil**

## **Unit I**

**Central Processor organization:** Bus organized computer, Memory address structure, Memory data register, program counter, Accumulator, Instruction register, Program counter, Accumulator, Instruction register, Instruction field, Micro operations, Register transfer languages, Instruction field, Decoding and execution, Instruction formats and addressing modes.

## **Unit II**

**Control unit organization:** Instruction sequencing, Instruction interpretation, Hardwired control, Micro-programmed control organization, Control memory, Address sequencing, Micro-instruction, Formats, Micro-program sequence, Microprogramming.

## **Unit III**

**Arithmetic processor design:** Addition and subtractions algorithm, Multiplication algorithm, Division algorithm Processor configuration, Design of control unit and floating point arithmetic.

## **Unit IV**

**Input Output organization:** Programmed I/O., I/O, addressing, I/O instruction, Synchronization, I/O interfacing, Interrupt mechanism, DMA, I/O processors and data communication, RISC, CISC, Loosely Coupled & Tights Coupled system.

## **Unit V**

**Memory organization and multiprocessing:** Basic concepts and terminology, Memory hierarchy, Semiconductor memories (RAM, ROM), Multiple module, Memories and interleaving (Virtual memory, Cache memory, Associative memory), Memory management hardware requirements, RISC & CISE Processor.

### **Name of Text Books:**

1. Computer System Architecture by M. Morris Mano, PHI
2. Computer Organization Architecture by J.P. Hayes, PHI

### **Name of Reference Books:**

1. Digital Computer Logic Design By M. Morris Mano, PHI
2. Structured Computer Organization by Andrew S. Tanenbaum PHI
3. Computer Organisation and Design, Pal-Chauduri, PHI

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester : VI**

**Subject: Advanced Semiconductor Devices**

**Total Theory Periods: 40**

**Total Marks in End Semester Examination: 80**

**Minimum number of Class tests to be conducted: Two**

**Branch: Electronics & Telecommunication**

**Code: 328637 (28)**

**Total Tutorial Periods: Nil**

## **UNIT – I**

**Metal Semiconductor Devices:** Metal-vacuum boundary: Schottky effect, Metal-Semiconductor boundary: Ohmic contact, Current transport across a metal-semiconductor boundary, Metal-Insulator-Semiconductor (MIS) System, Metal-Semiconductor-Field -Effect-Transistor (MESFET), Charge Coupled Devices (CCDs)

## **UNIT – II**

**Semiconductor Tunnel Devices:** Tunneling from the point of view of quantum measurement, Analysis of the Tunneling effect; Tunneling probability, Tunneling current density, Resonant tunneling. Tunnel Diodes; Qualitative and quantitative explanation of the Tunnel Diode I-V characteristics, Tunneling in a resonant tunneling diode, Indirect tunneling, Excess current, Thermal current in a tunnel diode, Dependence of tunnel diode characteristics on various parameters.

## **UNIT – III**

**Transferred – Electron Devices:** Introduction, Transferred – Electron effect; Bulk Electron Negative Differential Resistivity, Modes of Operation; Ideal – Uniform Field mode, Accumulation Layer Mode, Transit Time Dipole Layer Mode, Quenched Dipole Layer Mode, Limited Space Charge Accumulated Mode. Device performances; Cathode Contacts, Power-Frequency Performance and Noise, Functional Devices.

## **UNIT – IV**

**MOSFET:** Introduction, Basic Device Characteristics; Non-equilibrium condition, Linear and Saturation regions, Sub threshold region, Non-uniform Doping and Buried Channel Devices, Short-Channel Effects, MOSFET Structures; Scaled Down devices, HMOS, DMOS, Recessed-Channel MOSFET, Schottky-Barrier Source and Drain, Thin Film Transistor, SOI, VMOS, HEXFET.

## **UNIT – V**

**Transistor Structures:** Electron Transport in short devices and Compound Semiconductor Technology, Permeable Base Transistors, Planar Doped Barrier Devices, Real Space Transfer and Hot Electron Injection Transistors, Superlattice Devices.

### **Name of Text Books:**

1. Physics of Semiconductor Devices, S.M Sze, Wiley Student Edition
2. Physics of Semiconductor Devices, Michael Shur, PHI

### **Name of Reference Books:**

1. Physics of Semiconductor Devices, Dilip K. Roy, University Press
2. Semiconductor Devices-Modelling & Technology, Nandita Dasgupta & Amitava Dasgupta, PHI

# *Chhattisgarh Swami Vivekanand Technical University, Bilai*

**Semester : VI**

**Subject: Advanced Electronic Circuits Lab**

**Total Practical Periods: 28**

**Total Marks in End Semester Examination: 40**

**Branch: Electronics & Telecommunication**

**Code: 328621 (28)**

## **Experiments to be performed:**

- ✂✂ To design a LPF using R & C and to study its characteristics
- ✂✂ To design a HPF using R & C and to study its characteristics
- ✂✂ To design a BPF using R & C and to study its characteristics
- ✂✂ To design a Sample & Hold circuit and to study its output response.
- ✂✂ To design a multiplier circuit using variable Trans -conductance method.
- ✂✂ To design one quadrant divider using RC – 4200.
- ✂✂ To design Tchebyshev filter using OPAMP and to plot its frequency response.
- ✂✂ To design All Pass filter using OPAMP and to plot its frequency response.
- ✂✂ To design Bandpass filter using OPAMP and to plot its frequency response.
- ✂✂ To design a DAC using Weighted Resistor method.
- ✂✂ To design a ADC using parallel comparator method.
- ✂✂ To design HPF using OPAMP.
- ✂✂ To design LPF using OPAMP.
- ✂✂ To design HPF (Multistage) using OPAMP.
- ✂✂ To design a square Rooting circuit using multiplier.

## **List of Equipments/Machine Required:**

Discrete Components, Function Generator, Power Supply, CRO, AVO Meter, Multimeter, Voltmeter

## **Recommended Books:**

- ✂✂ Integrated Circuits: K. R. Botkar, Khanna Publishers.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester: VI**  
**Subject: Advanced Microprocessor & Interfacing Lab**  
**Total Practical Periods: 50**  
**Total Marks in End Semester Examination: 40**

**Branch: Electronics & Telecommunication**  
**Code: 328622 (28)**

## **Experiments to be performed:**

- ✂✂ To write a program to perform subtraction X-Y where X and Y are 48 bit numbers.
- ✂✂ To write a program to multiply 4 and 5 in ASCII and store the result.
- ✂✂ To find the largest number from a block of 15 bytes
- ✂✂ To find the smallest number from a block of 15 bytes
- ✂✂ To write a program to add series of 20 bytes.
- ✂✂ A block of 200-signed bytes is present in memory from address BA: EA add all the positive bytes and store 8 bit signed result in memory after this block.
- ✂✂ To write a program to compare two data blocks.
- ✂✂ To write a program to scan for a specific word in the block and to store the location of the word at a suitable memory location.
- ✂✂ To write an assembly language program to solve following arithmetic equation:  $3AX+5DX+BP$ .
- ✂✂ To write a program to arrange a data block in ascending order.
- ✂✂ To write a program to arrange a data block in descending order.
- ✂✂ To write a program to convert an 8-bit BCD number into its equivalent binary.
- ✂✂ To write a program to insert a specific data byte under certain given conditions.
- ✂✂ To write program to input a 4 bit BCD number, look up the seven segment code for this number and output to the display.
- ✂✂ To write a program to count the number of odd and even bytes in a data block.

## **List of Equipments/Machine Required:**

8086 Microprocessor kit, Keyboard, Assembler, PCs.

## **Recommended Books:**

The Intel 8086/8088 Microprocessor Architecture, Programming, Design and Interfacing– Bhupinder Singh Chhabra, Dhanpat Rai Publications.

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester: VI**

**Subject: Digital Signal Processing Lab**

**Total Practical Periods: 50**

**Total Marks in End Semester Examination: 40**

**Branch: Electronics & Telecommunication**

**Code: 328623 (28)**

**Experiments to be performed:**

- ✂✂ To generate Analog Signals.
- ✂✂ To generate discrete sequences
- ✂✂ To sample a sinusoidal signal at Nyquist rate
- ✂✂ To convolve two given signals
- ✂✂ To correlate two given signals
- ✂✂ To design LPF using recursive structures
- ✂✂ To design HPF using recursive structure
- ✂✂ To design BPF using recursive structure
- ✂✂ To design BSF using recursive structure
- ✂✂ To design LPF using non-recursive structures
- ✂✂ To design HPF using non-recursive structure
- ✂✂ To design BPF using non-recursive structure
- ✂✂ To design BSF using non-recursive structure
- ✂✂ To design a digital notch filter and embed it on a digital signal processor block
- ✂✂ Experimentation with application of DSP in Communication/Speech Processing/Image Processing

*(Institutes may append more programmes/Experiments based on the infrastructure available)*

**List of Equipments/Machine Required:**

C++ Compiler, MATLAB with Tool boxes, DSP Processor kit, Digital Storage CRO, Spectrum Analyzer.

**Recommended Books:**

1. Digital Signal Processing, Vallavaraj, Salivahanan, Gnanapriya, TMH

# *Chhattisgarh Swami Vivekanand Technical University, Bhilai*

**Semester: VI**

**Subject: Communication System-II Lab**

**Total Practical Periods: 50**

**Total Marks in End Semester Examination: 40**

**Branch: Electronics & Telecommunication**

**Code: 328624 (28)**

## **Experiments to be performed:**

- ✂✂ To perform experiment with delta modulation techniques and to study the waveforms.
- ✂✂ To perform experiment with adaptive delta modulation techniques and to study the waveforms.
- ✂✂ To study Signal sampling and reconstruction techniques.
- ✂✂ To study the effect on reconstructed waveform of the use of sample / hold circuit.
- ✂✂ To study the TDM Pulse Amplitude Modulation / Demodulation & to draw their waveforms.
- ✂✂ To study Time Division Multiplexing [Pulse Code Modulation /Demodulation]
- ✂✂ To study ASK Modulation.
- ✂✂ To study FSK Modulation.
- ✂✂ To study PSK Modulation.
- ✂✂ To study ASK Demodulation.
- ✂✂ To study FSK Demodulation.
- ✂✂ To study PSK Demodulation.
- ✂✂ To study Data Conditioning techniques.
- ✂✂ To study Data Reconditioning circuit.
- ✂✂ To generate any code using digital circuits.

## **List of Equipments/Machine Required:**

Communication Trainer Kits, Function Generator, Power Supply, CRO, Discrete Components.

## **Recommended Books:**

1. Principles of Communication Systems–Taub and Shilling, Tata Mc Graw Hill.
2. Handbook of Experiments in Electronics and Communication Engineering, Rao, Vikas Publishing House Pvt. Ltd.

# ***Chhattisgarh Swami Vivekanand Technical University, Bilai***

## **(C.G.)**

Semester: VI  
Subject: Managerial Skills  
Total Practical Periods: 28  
Total Marks in End Semester Exam: NIL  
Minimum number of class test to be conducted: 2

Branch: Common to all branches  
Code: 300625 (36)  
Total Tut Periods: NIL

### **Unit-I**

Managerial Communication Skills: Importance of Business Writing: writing business letters, memorandum, minutes, and reports- informal and formal, legal aspects of business communication, oral communication- presentation, conversation skills, negotiations, and listening skills, how to structure speech and presentation, body language.

### **Unit-II**

Managerial skills: Leadership: Characteristics of leader, how to develop leadership; ethics and values of leadership, leaders who make difference, conduct of meetings, small group communications and Brain storming, Decision making, How to make right decision, Conflicts and cooperation, Dissatisfaction: Making them productive.

### **Unit-III**

Proactive Manager: How to become the real you: The journey of self-discovery, the path of self-discovery, Assertiveness: A skill to develop, Hero or developer, Difference between manager and leader, Managerial skill check list, team development, How to teach and train, time management, Stress management, Self assessment.

### **Unit-IV**

Attitudinal Change: Meaning of attitude through example, benefits of positive attitude, how to develop habit of positive thinking, what is fear? How to win it? How to win over failure? How to overcome criticism? How to become real you? How to Motivate?

### **Unit-V**

Creativity – a managerial skill, Trying to get a grip on creativity.  
Overview of Management Concepts: Function of Management: Planning, organizing, staffing, controlling.

### **Text & Reference Books:**

1. Basic Managerial skills for all by E.H. McGrawth, Prentice Hall India Pvt Ltd,2006
2. How to develop a pleasing personality by Atul John Rego, Better yourself books, Mumbai, 2006
3. The powerful Personality by Dr. Ujjawal Patni & Dr. Pratap Deshmukh, Fusion Books, 2006
4. How to Success by Brian Adams, Better Yourself books, Mumbai, 1969