


PLANNED SYLLABUS (Theory)

GP Kangra		Department: ECE		Subject :EDC-1		
SYLLABUS PLANING		Course : Diploma (3 rd Semester ECE)		Duration: 3 Yrs.		
		Total Period: 56		Theory : 56		
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remark
1	(1-2)	Concept of Voltage and Current Source	Concept of Voltage & Current Sources, Conditions for source to act as voltage source and current source, Graphical representation of voltage and current sources, difference between ideal and practical sources, Conversion of voltage source into current source and vice-versa.	Network Analysis and Synthesis by BR Gupta (S.Chand)	Principles of Electronics by Molvino	
2	(3-7)	Review of Basic Electronics	P-N Junction, Semiconductor Diode Characteristics (Forward/reverse), Zenor Diode, Zenordiode characteristics, Zenor Diode as Voltage Regulation.	Principles of Electronics by VK Mehta (S.Chand)	-----do-----	
3	(8-10)	Review & Discussion	Review & doubt session.			
4	(11-24)	Transistor	3.1 Transistor: Constructional Features of Transistor (PNP & NPN Type), Working Principle of Transistor, Working of Transistor as an Amplifier, Concept of Transistor biasing and selection of operating point, Potential divider biasing Circuit. Need for stabilization of operating point. 3.2 Configurations of Transistor: Common Base (CB), Common Emitter (CE), Common Collector (CC), Input/output Characteristics of Transistor in CB, CE & CC Modes 3.3 Transistor as an Amplifier in CE Configurations, Concept of DC load line and operating point. Performance characteristics of transistor amplifier i.e. input resistance, output resistance, effective collector load, current gain, voltage gain & power gain, Explanation of phase reversal of output voltage with respect to input voltage and its graphical demonstration, Concept of AC load line Emitter Follower Circuit. Working of Transistor	-----do-----	-----do-----	

			<i>as a switch.</i>		
5	(25-27)	Review & Discussion	Review & doubt session.		
6	(28-33)	Multistage Amplifiers	Need for multistage amplifier; Gain of multistage amplifier; Expression of gain of Amplifier in dB, Different types of multistage amplifier: RC coupled, Transformer coupled, and Direct coupled amplifier, Frequency response and bandwidth of RC Coupled Amplifier.	-----do-----	-----do-----
7	(34-37)	Review & Discussion	Review & doubt session.		
8	(38-45)	Large Signal Amplifiers	Difference between Voltage & Power Amplifier, Importance of Impedance matching in Amplifiers, Classification of Amplifiers: Class A, Class B, Class C, Class AB, Push Pull Amplifier-Circuit Description & Working, Complementary Push-Pull Amplifier Circuit.	-----do-----	-----do-----
9	(46-52)	Feedback in Amplifiers	Types of feedbacks in Amplifier, Derivation of expression for gain of an amplifier employing feedback (negative & positive), Effect of negative feedback on gain, gain stability, distortion, frequency response, bandwidth and input & output impedance of an amplifier. RC coupled amplifier circuit with & without emitter bypass capacitor, Advantages and disadvantages of negative feedback in amplifier circuit.	-----do-----	-----do-----
10	(53-56)	Field effect transistors (FET)	Construction, working principle and V-I characteristics of FET, difference between FET and Bipolar junction transistor (BJT), Difference between MOSFET and FET, Comparison between BJT, FET and MOSFET in terms of their features and applications.	-----do-----	-----do-----

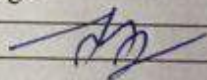
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Date: 15/9/21	

GP Kangra	Department: ECE	Subject: NFTL
	Course: Diploma	Duration : 03 Years
Syllabus Planned	Total Periods: 56(T) + 28(P)	Theory: 56

SYLLABUS PLANNED

S. N.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks	
1	1-18	1. Networks 1.1 Two port (four terminals) network: Basic concepts of the following terms:- Symmetrical and asymmetrical networks: Balanced and unbalanced network; T-network, p network, Ladder network; Lattice network; L-network and Bridge T-network 1.2 Symmetrical Network: -Concept and significance of the terms characteristic impedance, propagation constant, attenuation constant, phase shift constant and insertion loss, T-network; p-Network 1.3 Asymmetrical Network-Concept and significance of iterative impedance, image Impedance, Image transfer constant and insertion loss.	Network Filters and Transmission Lines by A K Chakravorty ; Dhanpat Rai & Co. Publication, New Delhi	Network Filters and Transmission line by Umesh Sinha		
2	19-24	2. Attenuators 2.1 Units of attenuation (Decibels and Nepers); General characteristics of attenuators. 2.2 Analysis and design of simple attenuator of following types; Symmetrical T and II type.				
3	25-42	3. Filters 3.1 Brief idea of the use of filter networks in different communication systems, Concept of low pass, high pass, band pass and band stop filters. 3.2 Analysis of prototype Low and High pass (T and pi) filter. 3.3 Impedance characteristics v/s frequency characteristics of a low and high pass filter and their significance. 3.4 Attenuation vs. frequency, Phase shifts frequency, Characteristics impedance Vs. frequency of T and p Low and High pass filters and their significance. 3.5 Simple design problems of prototype low & high pass section. 3.6 Limitation of prototype filters, need of m-derived filters. Brief idea of m-derived				

4		43-56	<p>Low and High filter(T and p) section. 3.7 Crystal Filters; Crystal and its equivalent circuit; Special properties of piezoelectric filters and their use.</p> <p>4. Transmission Lines 4.1 Transmission Lines, their types and applications. 4.2 Distributed constants, T and p representation of transmission line section. 4.3 Definition of characteristic impedance, propagation constant, attenuation constant and phase shift constant. 4.4 Condition for minimum distortion and minimum attenuation of signal on the-line and introduction to loading methods. 4.5 Concept of reflection and standing waves, definition of reflection coefficient, SWR & VSWR and their relation(no derivation). 4.6 Concept of transmission lines at high frequencies.</p>		
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PLANNED SYLLABUS COVERAGE (Theory)

Gp Kangra		Department: ECE			Subject : DE	
Syllabus Coverage		Course : Diploma			Duration: 3 Yrs.	
		Total Period: 56			Theory : 56	
Sr. No.	Period Nos.	Topic	Details	Instruction reference	Additional Study Recommended	Remarks
1	1 to 4	Introduction	Analog Signal, Digital Signal, Difference between Analog & Digital Signal, Applications & Advantages of Digital Signal	Modern Digital Electronics by R. P. Jain		
2	5 to 12	Number System	Binary, Octal, & Hexadecimal number systems, Conversion from Decimal, Octal & Hexadecimal Systems to Binary System & Vice Versa. - Binary Addition, Subtraction, Multiplication, Division, 1's and 2's compliment methods of subtraction. - Concept of code: 8421, BCD, Excess 3 and Gray Code - Concept of Parity			
3	13 to 22	Logic Gate and Families	Logic symbol, logical expression and truth table of AND, OR, NOT, NAND, NOR, EX-OR gates, - Universal property of NAND and NOR gate. - Logic Simplification Circuits-Basic laws of Boolean algebra, Duality theorem, De Morgan's Theorems. - Boolean expressions using Sum of Products (SOP) and Product of Sums (POS) forms. - K-map representation of logical functions. - Minimization of logical expressions using K-map (2, 3, 4 variables). - Logic Gates & Families (SSI, MSI, LSI, VLSI, ULSI)	Fundamentals of Digital Circuits by A. Anand Kumar, PHI Publications	Digital Electronics by Pratima Manhas & Shaveta Thakral, KATSON Publication, New	

4	23 to 28	Arithmetic Circuits	Half Adder/Full Adder Circuit, their design and implementation - Half Subtractor /Full Subtractor Circuit, their design and implementation		
5	29 to 36	Decoder, Encoder, Multiplexer & De-Multiplexer	Basic binary decoder, Encoder-Decimal to BCD Encoder - Block diagram, Truth table, Logical expression and logic diagram of Multiplexers (4:1 and 8:1). - Block diagram and Truth table of Demultiplexer (1:4 and 1:8)		
6	37 to 50	Flip Flops, Counters, Shift-Registers	One-bit memory cell, clock signal, Latch-SR Latch, Difference between Latch & Flip-Flop - Flip Flops: S- R Flip flop, D- Flip Flop, J-K Flip Flop, Master Slave Flip-Flop, T- Flip Flop - Counters: Asynchronous Counters Ripple Counter (2 bit, 3-bit, Decade) : Synchronous Counters (2-bit, 3-bit, decade synchronous counter), Ring Counter - Shift Registers: Concept of Shift registers, Types of Shift registers (SISO, SIPO, PISO, PIPO and Universal Shift Registers) - Applications of Flip-Flops, Counters & Shift Registers	Fundamentals of Digital Circuits by A. Anand Kumar, PHI Publications	
7	51 to 52	Memories	Classification of Memories RAM, ROM, PROM, EPROM, E2PROM, Cache Memory, Static and Dynamic RAM		
8	53 to 56	D/A & A/D Converters	Digital to Analog Converters (Weighted register, R-2R Ladder D/A Converter) Analog to Digital Converter (Dual Slope method, Successive Approximation A/D Converter) Applications of A/D & D/A Converter		

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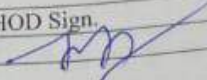
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PLANNED SYLLABUS COVERAGE (Theory)

G P Kangra		Department: ELECTRNIC&COMMENGG.				
		Subject : PRINCIPLES OF COMMUNICATION ENGG.				
		Course : Diploma Duration : Three years				
SYLLABUS COVERAGE		Total Periods: 56+28 Theory : 56				
Sr No	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1 to 2	INTRODUCTION	Need for modulation and demodulation in communication systems. Basic scheme of a modern communication system.	Communicati on sytem by Sanjay Sharma		
2.	3 TO 8	Amplitude Modulation	Derivation of expression for an amplitude modulated wave. Carrier and side band components. Modulation index. Spectrum and bandwidth of AM Wave. Relative power distribution in carrier and side bands. Elementary idea of DSB-SC, SSB-SC, ISB and VSB modulations, their comparison, and areas of application.	-do-		
3.	9 to 14	Frequency Modulation	Expression for frequency modulated wave and its frequency spectrum (without Proof and analysis of Bessel function) Modulation index, maximum frequency deviation and deviation ratio, BW and FM signals, Carson's rule. Effect of noise an FM carrier. Noise triangle, Role of limiter, Need for pre-emphasis and de-emphasis, capture effect. Comparison of FM and AM in communication systems.	-do-		
4.	15 to 16	Phase Modulation	Derivation of expression for phase modulated wave, modulation index, comparison . with frequency modulation	-do-		

5.	17 to 21	Principles of Modulators	Working principles and typical application of:- - Square Law Modulator. - Switching Modulator - Collector modulator - Balanced Modulator.	Electronics & Communication by Kennedy
6.	22 to 26	Principles of FM Modulator	Working principles and applications of reactance modulator, varactor diode modulator, VCO and Armstrong phase modulator.	Electronics & Communication by Kennedy
7.	27-35	Demodulation of AM waves	Principles of demodulation of AM wave using diode detector circuit, concept of clipping and formula for RC time constant for minimum distortion (no derivation) ,Principle of demodulation of AM Wave using synchronous detection	Electronics & Communication by Kennedy
	36-43	Demodulation Of FM Waves	Basic principles of FM detection using slope detector Principle of working of the following FM demodulators:- - Foster-Seeley discriminator - Ratio detector - Quadrature detector - Phase locked Loop (PLL) FM demodulators	Electronics & Communication by Kennedy
9.	44-56	Pulse Modulation	Statement of sampling theorem and elementary idea of sampling frequency for pulse modulation. Basic concepts of time division multiplexing (TDM) and frequency division multiplexing (FDM). Basic ideas about PAM, PPM, PWM. Pulse code Modulation (PCM) Basic scheme of PCM system. Pulse code Modulation (PCM) Basic scheme of PCM system. Quantization, quantization error, commanding, block diagram of TDMPCM communication system and function of each block. Advantages of PCM systems. Concepts of differential PCM (DPCM). Delta Modulation (DM). Basic principle of delta modulation	Communication system by Sanjay Sharma

			system, advantages of delta modulation system over PCM system. Limitations of delta modulation, concept of adaptive delta modulation (ADM).			
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Department: EC.E. Subject : Electronic Instruments & Measurement

Course : Diploma Duration : Three years

Total Periods: 56

Theory : 56

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Planned

Sr. No	No. of Periods	Topic & Details	Instruction Reference	Additional Study Recommended	Remarks
1	1-4	1. Basics of Measurements - Measurement, method of measurement, types of instruments - Specifications of instruments: Accuracy, precision, sensitivity, resolution, range, errors in measurement, sources of errors, limiting errors, loading effect, importance and applications of standards and calibration	AK SAWHEN Y (DANPHA T RAI)		
2	5-18	2. Transducers - Distinction between active and passive transducers with examples. Basic requirements of a transducer - Principle of operation of the following transducers and their applications in measuring the physical quantities listed against each one of them: Variable Resistance Type (strain gauge, thermistor, hygrometer) i. Variable capacitance type (pressure gauge, dielectric gauge) ii. Variable inductance type (LVDT, Burdon pressure gauge) iii. Others (solid state sensor, thermocouple, piezoelectric device, photoelectric device, proximity probe)	---do---		
3	19-30	3. Cathode Ray Oscilloscope - Construction and working of Cathode Ray Tube (CRT) - Block diagram description of a basic CRO and triggered sweep oscilloscope, front panel controls - Specifications of CRO and their explanation - Measurement of current, voltage, frequency, time period and phase using CRO - Digital storage oscilloscope (DSO) : block diagram and working principle	----do---		
4	31-38	4 Voltage, Current and Resistance Measurement	----do---		

		<ul style="list-style-type: none"> - Principles of measurement of DC voltage, DC current, AC voltage, AC current - Principles of operation and construction of permanent magnet moving coil (PMMC) instruments and Moving iron type instruments.
5	39-46	<p>5 Signal Generators and Analytical Instruments</p> <ul style="list-style-type: none"> - Explanation of block diagram specifications of low frequency and RF generators, pulse generator, function generator - Distortion factor meter - Instrumentation amplifier: its characteristics, need and working
6	47-56	<p>6. Digital Instruments</p> <ul style="list-style-type: none"> - Comparison of analog and digital instruments - Working principle of ramp, dual slope and integration type digital voltmeter - Block diagram and working of a digital multi-meter - Specifications of digital multi-meter and their applications - Limitations of digital multi-meters

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