### Khurda

### Department of Electrical & Electronics Engineering

Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: Shradhanjali Mishra

Semester: 5th

Subject : ANALOG & DIGITAL COMMUNICATION

1st	1st	Communication Process- Concept of Elements of Communication
	2nd	System & its Blockdiagram
	3rd	Source of information & Communication Channels.
	4th	Classification of Communication systems (Line & Wireless or Radio)
	1st	Modulation Process, Need of modulation and classify modulation process
2nd	2nd	Analog and Digital Signals & its conversion.
	3rd	Basic concept of Signals & Signals classification (Analog and Digital)
	4th	Bandwidth limitation
	1st	Amplitude modulation & derive the expression for amplitude
3rd	2nd	modulation signal, powerrelation in AM wave & find Modulation Index.
	3rd	Generation of Amplitude Modulation(AM)- Linear level AM modulation only
	4th	Demodulation of AM waves (liner diode detector, square law detector & PLL)
4th	1st	Explain SSB signal and DSBSC signal
	2nd	Methods of generating & detection SSB-SC signal (Indirect method
	3rd	only)
	4th	Methods of generation DSB-SC signal (Ring Modulator ) and detection
5th	1st	of DSB-SC signal(Synchronous detection)
	2nd	Concept of Balanced modulators

	3rd	Vestigial Side Band Modulation
	4th	Concept of Angle modulation & its types (PM & FM)
6th	1st	Basic principle of Frequency Modulation & Frequency Spectrum of FM Signal.
6th	2nd	Expression for Frequency Modulated Signal & Modulation Index and sideband of FM signal
	3rd	Explain Phase modulation & difference of FM & PM)- working
	401	
	1st	Compare between AM and FM modulation (Advantages & Disadvantages)
7th	2nd	Methods of FM Generation (Indirect (Armstrong) method only)
	3rd	working principle with BlockDiagram
	4th	Methods of FM Demodulator or detector (Forster-Seely & Ratio
	1st	detector)- working principlewith Block Diagram
8th	2nd	Classification of Radio Receivers
011	3rd	Define the terms Selectivity, Sensitivity, Fidelity and Noise Figure
	4th	AM transmitter - working principle with Block Diagram
	1st	Concept of Frequency conversion, RF amplifier & IF amplifier ,Tuning, S/N ratio
9th	2nd	Working of super heterodyne radio receiver with Block diagram
	3rd	Working of FM Transmitter & Receiver with Block Diagram.
	4th	Concept of Sampling Theorem , Nyquist rate & Aliasing
	1st	Sampling Techniques (Instantaneous, Natural, Flat Top)
10th	2nd	Analog Pulse Modulation - Generation and detection of PAM, PWM & PPM system with thehelp of Block diagram & comparison of all above.
	3rd	Concept of Quantization of signal & Quantization error.
	4th	Generation of PCM system with Block diagram & its applications.
	1st	Demodulation of PCM system with Block diagram & its applications.
11th	2nd	Companding in PCM & Vocoder
	3rd	Time Division Multiplexing & explain the operation with circuit diagram.
	4th	Generation & demodulation of Delta modulation with Block diagram.
12th	1st	Generation & demodulation of DPCM with Block diagram.
	2nd	Comparison between PCM, DM , ADM & DPCM
	3rd	Concept of Multiplexing (FDM & TDM)- (Basic concept, Transmitter & Receiver)

	4th	Digitalmodulation formats
4211	1st	Advantages of digital communication system over Analog system
	2nd	Digital modulation techniques & types.
1301	3rd	Generation and Detection of binary ASK, FSK, PSK, QPSK, QAM, MSK, GMSK.
	4th	
	1st	Working of T1-Carrier system.
	2nd	Spread Spectrum & its applications
14th	3rd	Working operation of Spread Spectrum Modulation Techniques (DS-SS & FH-SS).
	4th	Define bit, Baud, symbol & channel capacity formula.(Shannon Theorems)
15th	1st	Application of Different Modulation Schemes.
	2nd	Types of Modem & its Application
	3rd	Problem Solving
	4th	

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Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: S. Santosh Kumar Patra

Semester: 5th

#### Subject : DIGITAL ELECTRONICS & MICROPROCESSOR

Week	Class	Topics to Cover
	1st	Binary, Octal, Hexadecimal number systems and compare with Decimal system.
1st	2nd	Binary addition, subtraction, Multiplication and Division.
	3rd	1's complement and 2's complement numbers for a binary number
	4th	Subtraction of binary numbers in 2's complement method.
	1st	Use of weighted and Un-weighted codes & write Binary equivalent
	2nd	numberfor a number in 8421, Excess-3 and Gray Code and vice-versa.
2nd	3rd	Importance of parity Bit.
	4th	Logic Gates: AND, OR, NOT, NAND, NOR and EX-OR gates with truth table.
	1st	Realize AND, OR, NOT operations using NAND, NOR gates.
2rd	2nd	Different postulates and De-Morgan's theorems in Boolean algebra.
Siu	3rd	Use Of Boolean Algebra For Simplification Of Logic Expression
	4th	Karnaugh Man For 2.2.4 Variable, Simplification Of SOB And BOS Logic
	1st	Expression
4th	2nd	Using K-Map
401	3rd	Give the concept of combinational logic circuits.
	4th	Half adder circuit and verify its functionality using truth table.
	1st	Realize a Half-adder using NAND gates only and NOR gates only.
5th	2nd	Full adder circuit and explain its operation with truth table.
	3rd	Realize full-adder using two Half-adders and an OR – gate and
	4th	write truth table
6th	1st	Full subtractor circuit and explain its operation with truth table.
	2nd	Operation of 4 X 1 Multiplexers and 1 X 4 demultiplexer
	3rd	Working of Binary-Decimal Encoder & 3 X 8 Decoder.
6th	4th	Working of Two bit magnitude comparator.

7th	1st	Give the idea of Sequential logic circuits.
	and	State the necessity of clock and give the concept of level clocking and
	2110	edge triggering,
	3rd	Clocked SR flip flop with preset and clear inputs.
	4th	Construct level clocked JK flip flop using S-R flip-flop and explain with
	1st	truth table
	2nd	Concept of race around condition and study of master slave JK flip flop.
8th	3rd	Give the truth tables of edge triggered D and T flip flops and draw their symbols.
	4th	Applications of flip flops.
	1st	Define modulus of a counter
<b>0</b> .1	2nd	4-bit asynchronous counter and its timing diagram.
9th	3rd	Asynchronous decade counter.
	4th	4-bit synchronous counter.
	1st	Distinguish between synchronous and asynchronous counters.
	2nd	State the need for a Register and list the four types of registers.
10th	3rd	
	4th	Working of SISO, SIPO, PISO, PIPO Register with truth table using flip flop
	1st	Introduction to Microprocessors
	2nd	Introduction to Microcomputers
11th	3rd	Architecture of Intel 8085A Microprocessor and description of each block.
	4th	Pin diagram and description.
	1st	Stack, Stack pointer & stack top
	2nd	Interrupts
12th	3rd	Opcode & Operand,
	4th	Differentiate between one byte, two byte & three byte instruction with example.
	1st	Instruction set of 8085 example
12+h	2nd	Addressing mode
13th	3rd	Fetch Cycle, Machine Cycle, Instruction Cycle, T-State
	4th	Timing Diagram for memory read, memory write, I/O read, I/O write
	1st	Timing Diagram for 8085 instruction
14th	2nd	Counter and time delay.
	3rd	Simple assembly language programming of 8085.
	4th	Basic Interfacing Concepts
15th	1.04	Functional block diagram and description of each block of
	ISC	Programmable peripheral interfaceIntel 8255
	2nd	Application using 8255: Seven segment LED display
	3rd	Drohlam Salving
	4th	

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### Department of Electrical & Electronics Engineering

Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: Rashmi Rekha P:al

Semester: 5th

Subject : POWER ELECTRONICS AND PLC

Week	Class Day	Topics to Cover
1st	1st	Construction, Operation, V-I characteristics & application of power diode, SCR,DIAC,TRIAC, Power MOSFET,GTO &IGBT
	2nd	Two transistor analogy of SCR, Gate characteristics of SCR.
	3rd	Numerical related to gate turn on and off of MOSFET,BJT
	4th	Turn on methods of SCR.
	1st	Turn off methods of SCR (Line commutation and Forced commutation)
2nd	2nd	Load Commutation
	3rd	Resonant pulse commutation
	4th	Voltage and Current ratings of SCR.
	1st	Protection of SCR
ard	2nd	Over voltage protection
Siu	3rd	Over current protection
	4th	Gate protection
	1st	Firing Circuits
	2nd	General layout diagram of firing circuit
4th	3rd	R firing circuits, R-C firing circuit
	4th	UJT pulse trigger circuit, Synchronous triggering (Ramp Triggering )
	1st	Design of Snubber Circuits
	2nd	Doubt Clearing and revision
5th	3rd	Controlled rectifiers Techniques(Phase Angle, Extinction Angle control), Singlequadrant semi converter, two quadrant full converter and dual Converter
	4th	Working of single-phase half wave controlled converter with Resistive and R-Lloads.
6th	1st	Problem Solving and realizing the wave forms.
	2nd	Understand need of freewheeling diode.
6th	3rd	Working of single phase fully controlled converter with resistive and R- L loads.

	1+b	Working of three-phase half & fully wave controlled converter
	411	with Resistive load
7th	1st	Doubt Clearing and Problem Solving
	2nd	Working of single phase AC regulator.
	3rd	Working principle of step up & step down chopper.
	4th	Control modes of chopper
	1st	Operation of chopper in all four quadrants.
0.1	2nd	Classify inverters.
8th	3rd	Explain the working of series inverter & parallel inverter
	4th	Explain the working of single-phase bridge inverter.
	1st	Explain the basic principle of Cyclo-converter.
	2.1	Explain the working of single-phase step up & step down
9th	2nd	Cyclo-converter.
	3rd	List applications of power electronic circuits.
	4th	List the factors affecting the speed of DC Motors.
	1st	Speed control for DC Shunt motor using converter & choper
	2nd	List the factors affecting speed of the AC Motors.
10+h	Qued	Speed control of Induction Motor by using AC voltage
1001	310	regulator.
	/th	Speed control of induction motor by using converters and
		inverters (V/F control).
	1st	Working of UPS with block diagram.
	2nd	Battery charger circuit using SCR with the help of a diagram.
11th	3rd	Basic Switched mode power supply (SMPS) - explain its working &
	510	applications
	4th	Numerical on cyclo-converter
	1st	Advantages of PLC
	2nd	Different parts of PLC by drawing the Block diagram and
12th	2110	purpose of each part of PLC.
	3rd	Applications of PLC
	4th	Ladder diagram
	1st	Description of contacts and coils in the following states
	2nd	Normally open ii) Normally closed iii) Energized output
13th		iv)latched Output v)branching
	3rd	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate.
	4th	Ladder diagrams for combination circuits using NAND,NOR,
		AND, OR and NOT
14th	1st	Imers-I) I ON II) I OFF and III) Retentive timer
	2nd	Counters-CTU, CTD
	3rd	Ladder diagrams using Timers and counters
	4th	PLC Instruction set
15th	1st	Ladder diagrams for following
	2nd	L starter and STAR-DELTA starter (ii) Stair case lighting (iii)
		I rattic lightControl (IV) Temperature Controller
	Brd	Special control systems- Basics DCS & SCADA systems
	4th	Computer Control–Data Acquisition, Direct Digital Control System
	-	(Basics only)

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### Department of Electrical & Electronics Engineering

#### Lesson Plan for Odd Semester

Course: Diploma in Engineering

Teachers Name: S. Santosh Kumar Patra

Semester: 5th

Subject : WAVE PROPAGATION & BROADBAND COMMUNICATION ENGINEERING

Week	Class Day	Topics to Cover
1st	1st	Understand the concept of EM Wave and its effects of environment.
	2nd	Understand the principles of working of antennas
	3rd	Understand the theory of Propagation
	4th	Explain the concept of Wave propagation and antenna.
	1st	Explain the propagation of signal through transmission lines.
and	2nd	Explain the transmission of waves through rectangular wave-guide.
2110	3rd	Discuss the losses, SWR & Impedance matching of transmission line.
	4th	Explain the fundamental principle of TV transmission and reception.
	1st	Explain the principle of working of TV camera. (CCTV)
2	2nd	Explain the principle of colour TV system.
3rd	3rd	Discuss the principle of Digital TV.
	4th	Discuss the principle of HDTV.
	1 ct	Effects of environments such as reflection, refraction, interference,
	ISt	diffraction, absorption andattenuation (Definition only)
4th	2nd	Classification based on Modes of Propagation-Ground wave,
	3rd	Ionosphere ,Sky wave propagation,Space wave propagation
	4th	Definition – critical frequency, max. useable frequency, skip
	1st	distance, fading, Duct propagation& Troposphere scatter propagation actual height and virtual height
	2nd	Radiation mechanism of an antenna-Maxwell equation.
5th	3rd	Definition - Antenna gains, Directive gain, Directivity, effective
	4th	aperture, polarization, inputimpedance, efficiency, Radiator
		resistance, Bandwidth, Beam width, Radiation pattern
	1 ct	Antenna -types of antenna: Mono pole and dipole antenna and
	151	omni directional antenna
	2nd	Operation of following antenna with advantage & applications.
	3rd	Directional high frequency antenna : , Yagi & Rohmbus only
6th		
	4th	LIHE & Microwave antenna : Dish antenna (with parabolic reflector)
		& Horn antenna
		Pacic Concents of Smart Antennas- Concent and benefits of smart
7th	1st	antennas
		untennas

	2nd	Fundamentals of transmission line.
	3rd	Equivalent circuit of transmission line & RF equivalent circuit
	4th	Characteristics impedance, methods of calculations & simple numerical.
	1st	Losses in transmission line.
8th	2nd	Standing wave – SWR, VSWR, Reflection coefficient, simple numerical.
	3rd	Quarter wave & half wavelength line
	4th	Impedance matching & Stubs – single & double
	1st	Primary & secondary constant of X-mission line.
0+b	2nd	Monochrome TV Receiver -Block diagram & function of each block.
901	3rd	Colour TV signals (Luminance Signal & Chrominance Signal,( I & Q,U & V Signals).
	4th	Types of Televisions by Technology- cathode-ray tube TVs, Plasma
	1st	Display Panels, Digital LightProcessing (DLP),Liquid Crystal Display (LCD),Organic Light-Emitting Diode (OLED) Display,Quantum Light- Emitting Diode (QLED) – <b>only Comparison based on application</b>
10th	2nd	Discuss the principle of operation - LCD display, Large Screen Display.
	3rd	CATV systems & Types & networks
	4th	Digital TV Technology-Digital TV Signals, Transmission of digital TV
	1st	signals & Digital TV receiverVideo programme processor unit.
11th	2nd	Video Pragramme processor unit.
	3rd	Define Microwave Wave Guides.
	4th	Operation of rectangular wave gives and its advantage.
	1st	Propagation of EM wave through wave guide with TE & TM modes.
12th	2nd	Circular wave guide.
	3rd	Operational Cavity resonator.
	4th	Working of Directional coupler, Isolators & Circulator.
	1st	Microwave tubes-Principle of operational of two Cavity Klystron.
13th	2nd	Principle of Operations of Travelling Wave Tubes
1000	3rd	Principle of Operations of Cyclotron
	4th	Principle of Operations of Tunnel Diode & Gunn diode
14th	1st	Broadband communication system
	2nd	Cable broadband data network
	3rd	SONET(Synchronous Optical Network) Signal frame
	4th	components topologies advantagesapplications, and disadvantages
	1st	ISDN ISDN Devices interfaces, services, Architecture, application
15th	2nd	BISDN - interfaces & Terminals, protocol architecture applications
1301	3rd	Previous Vear Question Paper Souling
	4th	