"PVC" NSSK Govt. Polytechnic Bilaspur at Kalol
Lecture Planning (Theory)

Branch : **Mechanical Engg.** Semester: 2nd
Subject: **Fundamentals of Electrical & Electronics Engineering** Session: **Jan 25 - May 25**
Teacher : **Vivek Kumar** Cass Room : **L2**

Sr. No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Reference Resources	Rem
1.	1-10	**Overview of Electronic Components & Signals**	Passive Active Components: Resistances, Capacitors, Inductors, Diodes, Transistors, FET, MOS and CMOS and their Applications. Signals: DC/AC, voltage/current, periodic/non- periodic signals, average, rms, peak values, different types of signal waveforms, Ideal/non-ideal voltage/current sources, independent/dependent voltage current sources.	R1,R2,R3, R4,R5	
2.	11-18	**Overview of Analog Circuits**	Operational Amplifiers-Ideal Op-Amp, Practical op amp, Open loop and closed loop configurations, Application of Op-Amp as amplifier, adder, differentiator and integrator.	-do-	
3.	19-27	**Overview of Digital Electronics**	Introduction to Boolean Algebra, Electronic Implementation of Boolean Operations, Gates-Functional Block Approach, Storage elements-Flip Flops-A Functional block approach, Counters: Ripple, Up/down and decade, Introduction to digital IC Gates (of TTL Type).	-do-	
4.	28-37	**Electric and Magnetic Circuits**	EMF, Current, Potential Difference, Power and Energy; M.M.F, magnetic force, permeability, hysteresis loop, reluctance, leakage factor and BH curve; Electromagnetic induction, Faraday's laws of electromagnetic induction, Lenz's law; Dynamically induced emf; Statically induced emf; Equations of self and mutual inductance; Analogy between electric and magnetic circuits.	-do-	
5.	38-49	**A.C. Circuits**	Cycle, Frequency, Periodic time, Amplitude, Angular velocity, RMS value, Average value, Form Factor Peak Factor, impedance, phase angle, and power factor; Mathematical and phasor representation of alternating emf and current; Voltage and Current relationship in Star and Delta connections; A.C in resistors, inductors and capacitors; A.C in R-L series, R-C series, R-L-C series and parallel circuits; Power in A. C. Circuits, power triangle.	-do-	
6.	50-56	**Transformer and Machines**	General construction and principle of core and shell type of transformers; Emf equation and transformation ratio of transformers; Auto transformers; Basic principle of Electromechanical energy conversion.	-do-	

Signature of Teacher with Date 29/1/25

Signature of HOD VS