

PLANNED SYLLABUS COVERAGE (Theory)
“PVC”NSSK Government Polytechnic Bilaspur

GP Bilaspur		Department: Electrical Engineering		Subject : EM-I		Remarks
SYLLABUS COVERAGE		Course : Diploma		Duration: 3 Yrs.		
		Total Period: 56		Theory : 56		
Sr. No.	Period Nos	Topic	Details	Instruction Reference	Additional Study Recommended	
1	10 (1-10)	Polyphase Circuits	1.1 Advantage of 3-phase system over 1-phase system 1.2 Star-Delta Connection (phase current, line current, phase voltage, line voltage, relationship between phase & line parameters, phasor diagram) 1.3 Star-Delta Transformation 1.4 Power in 3-Phase circuit 1.5 Power Measurement in 3-phase circuit 1.6 Two Wattmeters method for measurement of Power and Power factor	Electrical Technology by JB Gupta, SK Kataria and Sons	Principles of Electrical Engineering by BR Gupta, S Chand & Co.	
2	24 (11-34)	Single-Phase Transformer	2.1 Constructional Features of Transformer: Shell type and core type transformer 2.2 Comparison between shell type and core type transformer 2.3 Working Principle of transformer 2.4 EMF equation of transformer, transformer ratio, rating of transformer (Numerical) 2.5 Concept of ideal transformer 2.6 Transformer phasor diagrams: Transformer phasor diagram on no-load and under loading conditions (Resistive, Inductive and capacitive load) 2.7 Equivalent circuit diagram of transformer referred to primary and secondary side. 2.8 Transformers Losses. 2.9 Tests on transformers: Polarity test, Open and short circuit test. 2.10 Transformer efficiency, all day efficiency, condition for maximum efficiency (derivation).	.-----do----- -----	-----do-----	

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3	12 (35-46)	Three-Phase Transformers	<p>2.11 Voltage regulation of a transformer for resistive, inductive and capacitive load. (Numericals)</p> <p>2.12 Parallel operation of single-phase transformer- Need and Necessary conditions</p> <p>3.1. Introduction and Construction of 3-phase transformer. Essential accessories of 3-phase Transformers: Conservator tank, breather, Buchholz's relay and their functions. 3.2 Advantage of a 3- phase unit transformer over 3-phase transformer using 3units of single phase transformer.</p> <p>3.3 Three-phase transformer configurations: delta-delta, delta-star, star-star, star-delta and their phase and line voltage and current relations (No derivation only study)</p> <p>3.4 Conditions for Parallel operation of Transformers.</p> <p>3.5 Difference between Power transformer and Distribution transformer</p> <p>3.6 Polarity test of 3-phasetransformer.</p> <p>3.7 Cooling methods in 3-phasetransformer</p>	-----do-- ---	-----do-----	
4	10 (46-56)	Special Purpose Transformer	<p>4.1 Autotransformer: Construction & working principle, Difference between autotransformer and two-winding transformer, Advantage and disadvantage of autotransformer, Applications of autotransformer.</p> <p>4.2 Instruments transformers: Current transformer (CT), Potential Transformer (PT), Difference between CT & PT, Applications of CT & PT</p>	-----do-- ---	-----do-----	

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Date: <i>31/08/2022</i>	<i>[Signature]</i>