Department of Electrical and Electronics Engineering

Lesson Plan & Work-done Diary for AY:2024-25, ODD Semester

Course with Code: High Voltage Engineering - BEE515A				Faculty: Mr. Raghavendra L			Semester & Section: V	
Class No.	**Date planned (DD/MM)**	**Topics to be covered**	**TLP Planned**	**Class No.**	**Date of Conduction (DD/MM)**	**Topics Covered**	**TLP Executed**	**Remarks if any deviation**
MODULE-1								
1		Introduction: Electric field stress, gas, liquid, solid and composite dielectrics.	PPT with Chalk and Talk ICT	1				
2		Gases as Insulating Media, Collision Process – types of collision, Mobility of ions and electrons.		2				
3		Ionization Processes- Ionization by collision.		3				
4		Townsend's Current Growth Equation--Current Growth in the Presence of primary and Secondary Processes		4				
5		Townsend's Criterion for Breakdown		5				
6		Paschen's Law and Corona Discharges.		6				
7		Purification of liquid dielectrics and Breakdown in Liquid dielectrics.		7				
8		Suspended particle, bubble and stressed oil volume mechanism.		8				
9		Conduction and Breakdown in Solid Dielectrics: Intrinsic, Thermal and Electromechanical Breakdown.		9				
10	08.05.24	Discussion on VTU QP /SRS Activity.		10				

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MODULE-2								
1		Voltage Doubler circuit, Voltage multiplier circuit- Cockcroft Walton circuit	PPT with Chalk and Talk ICT	1				
2		Ripple and voltage drop in multiplier circuit and Vandegraaff generator.		2				
3		Cascade transformers, Resonant transformers, Tesla coil.		3				
4		Generation of Impulse Voltages and currents: Standard impulse wave		4				
5		Circuit for producing impulse waves-Analysis of impulse generator RLC circuit		5				
6		Wave shape control and Marx circuit.		6				
7		Generation of impulse current: standard impulse current wave		7				
8		Circuit for producing impulse current wave.		8				
9		Discussion on VTU QP /SRS Activity.		9				
10		Discussion on VTU QP /SRS Activity.		10				

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MODULE-3								
1		Measurement of High DC Voltages – Series Resistance micro ammeter	PPT with Chalk and Talk ICT	1				
2		Resistance potential divider, Generating voltmeter.		2				
3		Series impedance voltmeter, Series capacitance voltmeter, Capacitance potential dividers, Capacitance voltage transformers.		3				
4		Electrostatic voltmeter, series capacitance peak voltmeter		4				
5		Spark gaps for measurement of High dc, ac and Impulse voltages		5				
6		Factors influencing the spark over voltage of sphere gaps.		6				
7		Resistance potential dividers and capacitance voltage dividers		7				
8		Mixed R-C potential dividers Peak reading voltmeters for impulse voltages.		8				
9		Hall generator, Resistive shunt, Rogowski coils and Magnetic links.		9				
10		Discussion on VTU QP /SRS Activity.		10				

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MODULE-4								
1		Lightning phenomenon –Charge formation in the clouds, Mechanism of lightning strokes	PPT with Chalk and Talk ICT	1				
2		Mathematical model for lighting, Overvoltages due to indirect stroke.		2				
3		Sudden load rejection and Ferranti effect.		3				
4		Control of overvoltages due to switching.		4				
5		Protection of transmission lines against overvoltages- Using shielded or ground wires		5				
6		Ground rods and counter poise wires		6				
7		Surge arresters -Protector tubes		7				
8		Nonlinear element surge arrestors.		8				
9	10.07.24	Discussion on VTU QP /SRS Activity.		9				
10	15.07.24	Discussion on VTU QP /SRS Activity.		10				

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MODULE-5								
1		Non-Destructive Testing of Materials and Electrical Apparatus	PPT with Chalk and Talk	1				
2		Power frequency measurements-Schering bridge for audio frequency, transformer ratio arm bridge.		2				
3		Partial discharge measurements-straight discharge detection, Balance detection.		3				
4		High Voltage Testing of Electrical Apparatus-Testing of insulators		4				
5		Testing of bushings and circuit breakers.		5				
6		Testing of cables.		6				
7		Testing of transformers		7				
8		Impulse test and Tests on surge arrestors.		8				
9		Discussion on VTU QP /SRS Activity.		9				
10	31.07.24	Discussion on VTU QP /SRS Activity.		10				

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Sl. No.	Activity	Planned	Actual	Remarks
1	Theory Classes	40		
2	Assignments/Quizzes/Self-study	3		
3	Tutorials/ Extra classes	-		
4	Internal Assessments	3		
5	ICT-based Teaching. (% of usage in Curriculum)	20		
Planning			**Execution**	
Faculty Signature:			**Faculty Signature:**	
HoD Signature:			**HoD Signature:**	