Meerut Institute of Engineering and Technology, Meerut			
CO-wise Syllabus			
1	CO-1	Statement	Apply Kirchhoff's laws in solving DC Circuits.
		Syllabus	***DC Circuits*** Electrical circuit elements (R, L and C), Concept of active and passive elements, voltage and current sources, concept of linearity, unilateral and bilateral elements. Kirchhoff‟s laws, Mesh and nodal methods of analysis.
2	CO-2	Statement	Understand the steady state behaviour of single phase and three phase AC circuits.
		Syllabus	***Steady State Analysis of Single Phase AC Circuits*** Representation of Sinusoidal waveforms – Average and effective values, Form and peak factors. Analysis of single phase AC Circuits consisting R-L-C combination (Series and Parallel) Apparent, active & reactive power, Power factor. Concept of Resonance in series & parallel circuits, bandwidth and quality factor. Three phase balanced circuits, voltage and current relations in star and delta connections
3	CO-3	Statement	Identify the application areas of a single phase two winding transformer and calculate their efficiency.
		Syllabus	***Transformers*** Magnetic circuits, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency.
4	CO-4	Statement	Elaborate the working principle of AC and DC machines with their applications.
		Syllabus	***Electrical machines*** DC machines: Principle & Construction, Types, EMF equation of generator and torque equation of motor, applications of DC motors (simple numerical problems) Three Phase Induction Motor: Principle & Construction, Types, Slip-torque characteristics, Applications (Numerical problems related to slip only) Single Phase Induction motor: Principle of operation and introduction to methods of starting, applications. Three Phase Synchronous Machines: Principle of operation of alternator and synchronous motor and their applications.
5	CO-5	Statement	Explain the working of low voltage electrical installation equipment.
		Syllabus	***Electrical Installations*** Introduction of Switch Fuse Unit (SFU), MCB, ELCB, MCCB, ACB. Types of Wires, Cables and Bus-bars. Fundamentals of earthing and lightning protection. Types of Batteries

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Subject Name	Fund. Of Electrical Engg. (BEE 101/201)

CO No.	Unit Name	Syllabus Topics	Lecture No
1	DC CircuitS	Concepts of network, Active and passive elements, voltage and current sources. Concept of linearity and linear network, unilateral and bilateral elements. R, L and C as linear elements.	1
		Voltage source, Current source transformation, Kirchhoff's laws .	2
		Mesh analysis with Numericals	3
		Mesh analysis with Numericals	4
		Nodal analysis with Numericals	5
		Nodal analysis with Numericals	6
2	Steady State Analysis Of Ac Circuits	Concepts of AC fundamentals: r.m.s value and average value	7
		Form factor and peak factor of different waveforms	8
		Form factor and peak factor of different waveforms	9
		Concept of phase & phasors, phasor representation of sinusoidally varying voltage and current wave	10
		Analysis of pure R, pure L and pure C circuit with power	11
		Analysis of Series RL, RC, RLC ckt and power traingle	12
		Analysis of Series RL, RC, RLC ckt and power traingle	13
		Resonance in series circuit, it's frequency & characteristics	14
		Bandwidth and quality factor	15
		Parallel Resonance	16
		Numericals on parallel R,L,C circuits	17
		Power factor	18
		Three phase star and delta connections	19
		Three phase star and delta connection numericals	20
3	Transformers	Magnetic Circuit	21
		Single phase transformer: construction and working	22
		Ideal and Practical transformers with phasor and equivalent circuit	23
		Ideal and Practical transformers with phasor and equivalent circuit	24
		Equivalent circuit of transformer with numericals	25
		Power losses in transformer	26
		Efficiency of transformer and numericals	27
		Maximum efficiency of transformer and regulation	28

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Subject Name	Fund. Of Electrical Engg. (BEE 101/201)

CO No.	Unit Name	Syllabus Topics	Lecture No
4	Electrical Machines	DC machines: Principle & Construction	29
		DC Generator- e.m.f equation, types ,applications	30
		DC Motor- Working,torque equation,back e.m.f	31
		DC Motor- Types, characteristics of series and shunt motors ,applications.	32
		Three Phase Induction Motor: Construction and working	33
		Slip, Slip-torque characteristics of three phase induction motor	34
		Single Phase Induction motor - Working & starting	35
		Synchronous motor - starting and working	36
5	Electrical Installation	LT Switchgears : Switch Fuse Unit (SFU), MCB,ELCB, MCCB,ACB	37
		Types of Wires and Cables,Bus-bar	38
		fundamental of earthing and protection of lightning.	39
		Types of Batteries	40