Lesson Plan

Electrical Engineering Department

Sem: 3rd (N-17)

FEE

Date:

Lectures =5, Practical = 02 (per week)

Sr.No.	Chapter	Topics	Date	Remarks
1	1	Basic Electrical Concepts	1 Sep 21	
2	1	Basic Electrical Terminologies: Potential Difference (Voltage), Charge, Current, Resistance, Power & Energy-Their definition, units and their interrelation with each other.	2 Sep 21	
3	1	Basic Electrical Terminologies: Potential Difference (Voltage), Charge, Current, Resistance, Power & Energy-Their definition, units and their interrelation with each other.	3 Sep 21	
4	1	Basic Electrical Terminologies: Potential Difference (Voltage), Charge, Current, Resistance, Power & Energy-Their definition, units and their interrelation with each other.	6 Sep 21	
5	1	Basic Electrical Terminologies: Potential Difference (Voltage), Charge, Current, Resistance, Power & Energy-Their definition, units and their interrelation with each other.	7 Sep 21	
6	2	Ohm's law, Resistances in Series and Parallel, Voltage & Current Divider Rules	8 Sep 21	
7	2	Effect of temperature on resistance, temperature coefficient of resistance, Resistivity	9 Sep 21	
8	2	Kirchhoff's Laws and their applications in solving Electrical Network Problems.	13 Sep 21	
9	2	Network Theorems: Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem	14 Sep 21	
10	2	Network Theorems: Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem	15 Sep 21	
11	2	Network Theorems: Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem	16 Sep 21	
12	2	Network Theorems: Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem	17 Sep 21	
13	2	Network Theorems: Thevenin's theorem, Norton's theorem, Superposition theorem, Maximum Power Transfer theorem	20 Sep 21	
14	3	Concept of Capacitance, Capacitor, Dielectric, Factors affecting Capacitance of a Capacitor.	21 Sep 21	
15	3	Concept of Capacitance, Capacitor, Dielectric, Factors affecting Capacitance of a Capacitor.	22 Sep 21	
16	3	Concept of Capacitance, Capacitor, Dielectric, Factors affecting Capacitance of a Capacitor.	23 Sep 21	

17	3	Capacitance of Parallel plates Capacitor & Cylindrical Capacitor	24 Sep 21	
18	3	Capacitance of Parallel plates Capacitor & Cylindrical Capacitor	27 Sep 21	
19	3	Grouping of Capacitors, Charging and Discharging of Capacitor, Time Constant, Energy Stored in a capacitor.	28 Sep 21	
20	3	Grouping of Capacitors, Charging and Discharging of Capacitor, Time Constant, Energy Stored in a capacitor.	29 Sep 21	
21	4	Grouping of Capacitors, Charging and Discharging of Capacitor, Time Constant, Energy Stored in a capacitor.	30 Sep 21	
22	4	Working Principle, Construction and Applications of Lead acid, Nickel-Cadmium, Silver Oxide, and Li-ion Batteries	1 Oct 21	
23	4	Working Principle, Construction and Applications of Lead acid, Nickel-Cadmium, Silver Oxide, and Li-ion Batteries	4 Oct 21	
24	4	Working Principle, Construction and Applications of Lead acid, Nickel-Cadmium, Silver Oxide, and Li-ion Batteries	5 Oct 21	
25	4	Charging methods used for Lead acid battery	6 Oct 21	
26	4	Charging methods used for Lead acid battery	7 Oct 21	
27	4	Care and maintenance of a Lead acid battery, testing of battery	11 Oct 21	
28	4	Care and maintenance of a Lead acid battery, testing of battery	12 Oct 21	
29	4	Care and maintenance of a Lead acid battery, testing of battery	13 Oct 21	
30	4	Grouping of cells in series and parallel (simple numerical problems).	14 Oct 21	
31	4	Grouping of cells in series and parallel (simple numerical problems).	15 Oct 21	
32	4	Grouping of cells in series and parallel (simple numerical problems).	18 Oct 21	
33	5	Introduction to Electromagnetism: Magnetic effect of electrical current MMF, Magnetic Flux, Reluctance	19 Oct 21	
34	4	Introduction to Electromagnetism: Magnetic effect of electrical current MMF, Magnetic Flux, Reluctance	20 Oct 21	
35	4	Introduction to Electromagnetism: Magnetic effect of electrical current MMF, Magnetic Flux, Reluctance	21 Oct 21	
36	4	Introduction to Electromagnetism: Magnetic effect of electrical current MMF, Magnetic Flux, Reluctance	22 Oct 21	
37	4	Permeability, Magnetic flux density (B), Magnetic field intensity (H), Analogy between Electric and Magnetic circuits	23 Oct 21	
38	5	Permeability, Magnetic flux density (B), Magnetic field intensity (H), Analogy between Electric and Magnetic circuits	29 Oct 21	
39	5	Permeability, Magnetic flux density (B), Magnetic field intensity (H), Analogy between Electric and Magnetic circuits	1 Nov 21	
40	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	2 Nov 21	

41	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	3 Nov 21	
42	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	4 Nov 21	
43	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	5 Nov 21	
44	5	Force on a Conductor placed in the Magnetic field, Force between two Parallel current carrying conductors.	8 Nov 21	
45	5	Force on a Conductor placed in the Magnetic field, Force between two Parallel current carrying conductors.	9 Nov 21	
46	5	Force on a Conductor placed in the Magnetic field, Force between two Parallel current carrying conductors.	10 Nov 21	
47	5	Series & Parallel Magnetic circuits, Numerical problems on magnetic circuits.	11 Nov 21	
48	5	Series & Parallel Magnetic circuits, Numerical problems on magnetic circuits.	15 Nov 21	
49	5	Concept of Hysteresis loop (B-H Curve) and Hysteresis loss.	16 Nov 21	
50	5	Concept of Hysteresis loop (B-H Curve) and Hysteresis loss.	17 Nov 21	
51	6	Faraday's Laws of electromagnetic induction.	18 Nov 21	
52	6	Lenz's law.	19 Nov 21	
53	6	Fleming's Right and Left Hand Rule.	22 Nov 21	
54	6	Principle of self and mutual induction.	23 Nov 21	
55	6	Principle of Self and mutually induced e.m.f. and simple numerical problems	24 Nov 21	
56	6	Inductances in Series and Parallel.	25 Nov 21	
57	6	Energy stored in a magnetic field.	26 Nov 21	
58	6	Concept of alternating current/EMF generation, Equation of instantaneous values of alternating current and voltage.	29 Nov 21	
59	6	AC terms: Cycle, Amplitude, Time period, Frequency, Instantaneous values, RMS value, Average value, Form factor, Peak factor. Numerical	30 Nov 21	
60	6	Representation of alternating sinusoidal quantities by vectors.	1 Dec 21	
61	7	-Phasor algebra (addition, subtraction of complex quantities).	2 Dec 21	
62	7	AC through pure resistance, inductance and capacitance.	3 Dec 21	
63	7	-Alternating voltage applied to RL, RC and RLC Series circuits (impedance triangle, phasor diagram and their solutions).	6 Dec 21	
64	7	Power in pure resistance (R), inductance (L), capacitance (C), RL, RC, and RLC circuits.	7 Dec 21	
65	7	Power in pure resistance (R), inductance (L), capacitance (C), RL, RC, and RLC circuits.	8 Dec 21	
66	7	Concept of Susceptance, Conductance and Admittance	9 Dec 21	
67	7	Active and reactive components of current and their significance	13 Dec 21	
68	7	Power factor and its practical significance	14 Dec 21	
69	7	Resonance in series and parallel circuits, Quality factor, Numerical.	15 Dec 21	
70	7	Revision Classes	16 Dec 21	
71	7	Revision Classes	17 Dec 21	
72	7	Revision Classes	20 Dec 21	

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41	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	3 Nov 21	
42	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	4 Nov 21	
43	5	Cross and Dot Convention, Right Hand thumb rule and Cork screw rule, Nature of magnetic field around straight current carrying conductor, Concepts of Solenoid and Torroid.	5 Nov 21	
44	5	Force on a Conductor placed in the Magnetic field, Force between two Parallel current carrying conductors.	8 Nov 21	
45	5	Force on a Conductor placed in the Magnetic field, Force between two Parallel current carrying conductors.	9 Nov 21	
46	5	Force on a Conductor placed in the Magnetic field, Force between two Parallel current carrying conductors.	10 Nov 21	
47	5	Series & Parallel Magnetic circuits, Numerical problems on magnetic circuits.	11 Nov 21	

Lesson Plan

ELECTRICAL MACHINES - I

Total Planned Lectures = 64 | Electrical Engineering | Semester =3rd

Sr.No.	Chapter	Topics	Date	Remark
1	Polyphase Circuits	Advantage of 3-phase system over 1-phase system	5 Sep 22	
2			6 Sep 22	
3		Star-Delta Connection (phase current, line current, phase voltage, line voltage, relationship between phase & line parameters, phasor diagram)	7 Sep 22	
4			8 Sep 22	
5		Star-Delta Transformation	12 Sep 22	
6			13 Sep 22	
7		Power in 3-Phase circuit	14 Sep 22	
8			15 Sep 22	
9		Power Measurement in 3-phase circuit	19 Sep 22	
10		Two Wattmeters method for measurement of Power and Power factor	20 Sep 22	
11			21 Sep 22	
12	Single-Phase Transformer	Constructional Features of Transformer: Shell type and core type transformer	22 Sep 22	
13			26 Sep 22	
14		Comparison between shell type and core type transformer	27 Sep 22	
15		Working Principle of transformer	28 Sep 22	
16			29 Sep 22	
17		EMF equation of transformer, transformer ratio, rating of transformer (Numerical)	3 Oct 22	
18			4 Oct 22	
19		Concept of ideal transformer	6 Oct 22	
20			10 Oct 22	
21		Transformer phasor diagrams: Transformer phasor diagram on no-load and under loading conditions (Resistive, Inductive and capacitive load)	11 Oct 22	
22			12 Oct 22	
23		Equivalent circuit diagram of transformer referred to primary and secondary side	13 Oct 22	
24			17 Oct 22	
25		Transformers Losses	18 Oct 22	
26			19 Oct 22	
27		Tests on transformers: Polarity test, Open and short circuit test	20 Oct 22	
28			25 Oct 22	
29		Transformer efficiency, all day efficiency, condition for maximum efficiency (derivation).	26 Oct 22	
30			27 Oct 22	
31		Voltage regulation of a transformer for resistive, inductive and capacitive load. (Numericals)	31 Oct 22	
32			1 Nov 22	
33		Parallel operation of single-phase transformer- Need and Necessary conditions.	2 Nov 22	
34			3 Nov 22	
35	Three-Phase Transformers	Introduction and Construction of 3- phase transformer. Essential accessories of 3-phase Transformers: Conservator tank, breather, Buchholz's relay and their functions.	7 Nov 22	
36			9 Nov 22	
37			10 Nov 22	
38			14 Nov 22	
39		Advantage of a 3-phase (single unit) transformer over 3-phase transformer using 3- units of single phase transformers	15 Nov 22	
40			16 Nov 22	
41		Three-phase transformer configurations: delta-delta, delta-star, star-star, star-delta and their phase and line voltage and current relations (No derivation only	17 Nov 22	
42			21 Nov 22	
43		Conditions for Parallel operation of Transformers	22 Nov 22	
44		Difference between Power transformer and Distribution transformer	23 Nov 22	
45		Polarity test of 3-phase transformer	24 Nov 22	
46		Cooling methods in 3-phase transformer	28 Nov 22	
47	Special purpose Transformers	Autotransformer: Construction & working principle	29 Nov 22	
48			30 Nov 22	
49		Difference between autotransformer and two-winding transformer	1 Dec 22	
50			5 Dec 22	
51		Advantage and disadvantage of autotransformer, Applications of autotransformer	6 Dec 22	
52			7 Dec 22	
53		Instruments transformers: Current transformer (CT), Potential Transformer (PT), Difference between CT & PT, Applications of CT & PT	8 Dec 22	
54			12 Dec 22	
55			13 Dec 22	
56	Review	**Polyphase Circuits**	13-20 Dec	
57				
58				
59		**Single phase Transformer**		
60				
61				
62		**Three phase Transformer**		
63				
64		Special Purpose Transformer		

Subject Teacher

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25/8/22

Lesson Plan

Electrical Engineering Department

Sem: 3rd (N-17) **Electronic Devices & Circuits-1** Date:

Lectures =4, Practical = 4(per week)

Sr.No.	Chapter	Topics	Date	Remarks
1	Concept of Voltage and Current Source	Concept of Voltage & Current Sources, Conditions for source to act as voltage source and current source, Graphical representation of voltage and current sources	5 Sep 22	
2		difference between ideal and practical sources, Conversion of voltage source into current source and vice-versa.	6 Sep 22	
3		Numerical Problems	6 Sep 22	
4	Review of Basic Electronics	P-N Junction	7 Sep 22	
5		Semiconductor Diode Characteristics (Forward/reverse	9 Sep 22	
6		Zenor Diode, Zenor diode characteristics,Zenor Diode as Voltage Regulator,	12 Sep 22	
7		Rectifier Half wave,),	13 Sep 22	
8		Full wave: Centre tap & bridge configuration	14 Sep 22	
9		ripple factor, filter circuits	16 Sep 22	
10		Review & discussion	19 Sep 22	
11	Transistor	Constructional Features of Transistor (PNP & NPN Type), Working Principle of Transistor	20 Sep 22	
12		Working of Transistor as an Amplifier	20 Sep 22	
13		Concept of Transistor biasing and selection of operating point	21 Sep 22	
14		Potential divider biasing Circuit	23 Sep 22	
15		Need for stabilization of operating point	26 Sep 22	
16		Configurations of Transistor: Common Base (CB), Common Emitter (CE), Common Collector	27 Sep 22	
17		(CC), Input/Output Characteristics of Transistor in CB, CE & CC Modes	28 Sep 22	
18		Transistor as an Amplifier (CE mode), Concept of DC load line and operating	4 Oct 22	
19		Performance characteristics of transistor amplifier i.e. input resistance, output resistance, effective collector load, current gain, voltage gain & power gain,	4 Oct 22	
20		Explanation of phase reversal of output voltage with respect to input voltage and its graphical demonstration	7 Oct 22	
21		Concept of AC load line Emitter Follower Circuit, Working of Transistor as a Switch	10 Oct 22	
22			10 Oct 22	
23		Review & discussion	11 Oct 22	
24	Multistage Amplifiers	Need for multistage amplifier, Gain of multistage amplifier	12 Oct 22	
25		Expression of gain of Amplifier in dB	12 Oct 22	
26		Different types of multistage amplifier: RC coupled, Transformer coupled, and Direct coupled amplifier,	14 Oct 22	
27			17 Oct 22	
28			17 Oct 22	
29			18 Oct 22	
30		Frequency response and bandwidth of RC Coupled Amplifier.	19 Oct 22	
31		Review & discussion	21 Oct 22	
32	Large Signal Amplifiers	Difference between Voltage & Power Amplifier	1 Nov 22	
33		Importance of Impedance matching in Amplifiers	1 Nov 22	
34		Classification of Amplifiers: Class A, Class B, Class C,	2 Nov 22	
35		Class AB, Push Pull Amplifier-Circuit Description & Working, Complementary Push-Pull	4 Nov 22	
36		Amplifier Circuit	7 Nov 22	
37			9 Nov 22	
38		Review & discussion	9 Nov 22	
39	Feedback in Amplifiers	Types of feedbacks in Amplifier ,Derivation of expression for gain of an amplifier employing feedback (negative & positive)	11 Nov 22	
40			14 Nov 22	
41		Effect of negative feedback on gain, gain stability, distortion, frequency response, bandwidth and input & output impedance of an amplifier.	15 Nov 22	
42			16 Nov 22	
43		RC coupled amplifier circuit with & without emitter bypass capacitor, Advantages and disadvantages of negative feedback in amplifier circuit.	18 Nov 22	
44			28 Nov 22	
45		Review & discussion	28 Nov 22	
46	Field effect transistors	Construction , working principle	2 Dec 22	
47		V-I characteristics of FET , difference between FET and Bipolar junction transistor (BJT)	12 Dec 22	
48		Difference between MOSFET and FET	13 Dec 22	
49		Comparison between BJT, FET and MOSFET in terms of their features and applications.	14 Dec 22	
50		Review & discussion	15 Dec 22	
51			16 Dec 22	

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27/5/2022

3rd Sem (N-17)
Total planned lectures = 64

LESSON PLAN
ELECTRICAL ENGINEERING DEPARTMENT
EEEM (Lectures = 4) per week

Date :

Sr.No.	Chapter	Topics	Date	Remarks
1	1.Materials classif...tion	Classification of materials into conducting, semi conducting and insulating materials through a brief reference to their atomic structure and energy bands	2 Sep 22	
2			3 Sep 22	
3			5 Sep 22	
4	2.Conducti... Materials	Conducting Materials	6 Sep 22	
5		Classification of conducting material as low resistivity and high resistivity materials. Low resistance materials	6 Sep 22	
6		Copper.General properties as conductor Resistivity temperature coefficient, density, mechanical properties of hard-drawn and annealed copper, corrosion, contact resistance	9 Sep 22	
7		Application in the field of electrical engineering.	12 Sep 22	
8		Aluminium: General properties as conductor: Rresistivity, temperature coefficient, density, mechanical properties of hard and annealed aluminium, solderability, contact resistance	13 Sep 22	
9		Applications in the field of electrical engineering	13 Sep 22	
10		steel: General properties as conductor: Resistivity, corrosion, temperature coefficient, density, mechanical properties, solderability, Applications in the field of electrical engineering.	16 Sep 22	
11		Introduction to bundle conductors and its applications	16 Sep 22	
12		Low resistivity copper alloys: Brass, Bronze (cadmium and Beryllium), their practical applications with reasons for the same	17 Sep 22	
13		Applications of special metals e.g. Silver, Gold, and Platinum etc.	19 Sep 22	
14		High resistivity materials and their applications e.g., manganin, constantin, Nichrome, mercury, platinum, carbon and tungsten	20 Sep 22	
15		Superconductors and their applications	23 Sep 22	
16			23 Sep 22	
17			24 Sep 22	
18	3. Ins...lating materials,Ge...ral properties	Electrical Properties Volume resistivity, surface resistance dielectric loss dielectric strength (breakdown voltage) dielectric constant.	26,27sep 2022	
19		Physical Properties: Hygroscopicity, tensile and compressive strength, abrasive resistance, brittleness	30 sep,1 oct 22	
20		Thermal Properties: Heat resistance, classification according to permissible temperature rise. Effect of overloading on the life of an electrical appliance, increase in rating with the use of insulating materials having higher thermal stability, Thermal conductivity. Electro-thermal breakdown in solid dielectrics	1,4,,oct22	
21		Chemical Properties: Solubility, chemical resistance, weatherability ,Mechanical properties, mechanical structure, tensile structure	7 Oct 22	
22	4 Insulating M...erials and their App...cation	Plastics , Definition and classification, Thermosetting materials:	10 Oct 22	
23		Phenol-formaldehyde resins (i.e. Bakelite) amino resins (urea formaldehyde and Malamine-formaldehyde), epoxy resins - their	11 Oct 22	
24			14 Oct 22	
25		Thermo-plastic materials: Polyvinyl chloride (PVC), polyethelene, silicons, their important	15 Oct 22	
26			15 Oct 22	
27		Natural insulating materials, properties and their applications	17 Oct 22	
28		Mica and Mica products	18 Oct 22	
29		Asbestos and asbestos products	21 Oct 22	
30		Ceramic materials (porcelain and steatite	21 Oct 22	
31		Cotton, Paper (Impregnated)	22 Oct 22	
32		Rubber, Bitumen,Mineral and insulating oil for transformers switchgear capacitors, high voltage insulated cables, insulating varnishes for coating and impregnation	1 Nov 22	
33		Enamels for winding wires	1 Nov 22	
34		Gaseous materials; Air, Hydrogen, Nitrogen, SF6 their properties and its applications	4 Nov 22	
35			4 Nov 22	
36			5 Nov 22	
37	5. Magnotic M...terials	Introduction - Magnetic Materials, Diamagnetic,paramagnetic and ferromagnetic	7 Nov 22	
38		permeabilty,B H curve magnetic saturation, hystersis loop including corecive force and residual magnetism	7 Nov 22	
39			11 Nov 22	
40		concept of eddy current and hysteresis loss,	14 Nov 22	
41		curie temperature, magnetostriction effect	15 Nov 22	
42		Soft Magnetic Materials	15 Nov 22	
43		Alloyed steels with silicon: High silicon, alloy steel for transformers low silicon alloy steel for electric rotating machines	18 Nov 22	
44		Cold rolled grain oriented steels for transformer, Non-oriented steels for rotating machine	18 Nov 22	
45		Nickel-iron alloys	19 Nov 22	
46		Soft Ferrites	19 Nov 22	
47		Hard magnetic materials	28 Nov 22	

		Tungsten steel, chrome steel	28 Nov 22	
		hard ferrites and cobalt steel, their applications	28 Nov 22	
50		Thermocouple	2 Dec 22	
51			2 Dec 22	
52	5. Special Purpo... Materials	bimetals	3 Dec 22	
53			5 Dec 22	
54		leads soldering and fuse material	6 Dec 22	
55			9 Dec 22	
56		Review	12 Dec 22	
57			13 Dec 22	
58			16 Dec 22	
59			17 Dec 22	
60			19 Dec 22	
61			20 Dec 22	

Subject Teacher

HOD

25/8/22

Lesson Plan

EEDD

semester = 3rd EE

tal Planned Lectures = 43 *2 = 86 Hrs

.No.	Chapter	Topics	Date	Remarks
1	Symbols and Signs Conventions	Various Electrical Symbols used in Domestic and Industrial Installation and Power System as per BIS.	1 Sep 22	
2			3 Sep 22	
3			5 Sep 22	
4			8 Sep 22	
5	Wiring Diagrams	Design and Drawing of panels/Distribution board using MCBS, ELCB main switches	12 Sep 22	
6			15 Sep 22	
7			17 Sep 22	
8		Single line and wiring diagram for light and fan points and Power Point of a drawing room measuring 7mt x 5mt.	19 Sep 22	
9			22 Sep 22	
10		Single line and wiring diagram of workshop measure 10mt x 4mt containing 4 motors of 2HP each.	24 Sep 22	
11			26 Sep 22	
12		Simple Electric Circuit (Wiring and Single line diagram).	29 Sep 22	
13			1 Oct 22	
14	Projections of simple electrical parts & Machine parts.	Pin type	6 Oct 22	
15			3 Oct 22	
16		Class test-1	10 Oct 22	CT-1
17		Bus bar post	15 Oct 22	
18			17 Oct 22	
19		Shackle insulator	20 Oct 22	
20		Pole and coil of DC machine	22 Oct 22	
21			24 Oct 22	
22		Rotor of a squirrel cage induction motor	27 Oct 22	
23			29 Oct 22	
24		Slip rings of 3-phase induction Motor	31 Oct 22	
25			3 Nov 22	
26	Contactor Control Circuits: Schematic and wiring diagram	DOL Starter of 3-phase induction Motor	5 Nov 22	
27			5 Nov 22	
28			7 Nov 22	
29		Class Test-2	10 Nov 22	
30		Forwarding/reversing of 3-phase induction motor	14 Nov 22	
31			17 Nov 22	
32			19 Nov 22	
33		Limit switch control of a 3-phase induction motor	21 Nov 22	
34			26 Nov 22	
35			28 Nov 22	
36	Cad	Introduction to substation CAD drawing + Review	1 Dec 22	
37			3 Dec 22	
38			5 Dec 22	
39			8 Dec 22	
40			12 Dec 22	
41			15 Dec 22	
42			17 Dec 22	
43			19 Dec 22	

Subject Teacher 17/Aug/22

HOD

Lesson Plan

Electrical Machines-3

Electrical Engineering Semester =5th

otal Planned Lectures = 67

r.No.	Chapter	Topics	Date	Remarks
1	Three Phase Induction Motors	Constructional features of squirrel cage motor	1 Sep 22	
2		Constructional features of Phase wound motor ,	2 Sep 22	
3		comparison of cage and wound rotor Induction motors	3 Sep 22	
4		Production of rotating magnetic field in a three phase winding	5 Sep 22	
5		Principle of operation of induction motor, slip, significance of slip	6 Sep 22	
6		Effect of slip on various parameters of rotor circuit: rotor resistance, rotor inductance, rotor current, rotor frequency	7 Sep 22	
7			8 Sep 22	
8		Torque developed in 3-phase induction: starting torque, condition for maximum	9 Sep 22	
9			12 Sep 22	
10		Torque-slip and torque-speed curve	13 Sep 22	
11		Effect of rotor resistance upon torque slip relationship of slip ring induction motor	14 Sep 22	
12		Starting of 3-phase induction motors using DOL, Star-delta , and Autotransformer	15 Sep 22	
13		Speed control methods of 3-phase induction motor	16 Sep 22	
14		Testing of 3-phase motor on no load and blocked rotor test to find Efficiency	19 Sep 22	
15		Effect of induction motors on system power factor	20 Sep 22	
16		Double cage rotor induction motor and its applications	21 Sep 22	
17		Applications of induction motors + **Numericals**	22 Sep 22	
18	Synchronous Generator (Alternator)	Construction Feature of synchronous machine, salient and cylindrical type rotor synchronous machine,	23 Sep 22	
19		comparison between salient and cylindrical rotor machine , Advantages of rotating field system	26 Sep 22	
20		Different types of excitation system for synchronous machine: dc excitation system, static excitation system and brushless excitation system	27 Sep 22	
21		EMF equation of alternator + **Numericals**	28 Sep 22	
22		Concentrated and distributed windings, Concept of distribution factor and coil span factor and pitch factor	29 Sep 22	
23		Effect of armature reaction on terminal voltage	30 Sep 22	
24		Concept of synchronous reactance and synchronous impedance	4 Oct 22	
25		Phasor diagram of alternator on load: resistive, inductive and capacitive load	6 Oct 22	
26			7 Oct 22	
27		Effect of power factor on the terminal voltage of alternator	10 Oct 22	
28		**Class Test-1**	11 Oct 22	CT-1
29		Voltage regulation of alternator, determination of voltage regulation using synchronous impedance method	12 Oct 22	
30		Need and necessary conditions for parallel operation of alternators.	14 Oct 22	
31		Synchronization of alternators with bus bars using Synchroscope method and lamps method.	17 Oct 22	
32		**Numerical Practice**	18 Oct 22	

33	Synchronous Motor	Construction, operating principle	19 Oct 22	
34		Starting methods of synchronous motor	20 Oct 22	
35		Equivalent circuit diagram of synchronous motor	21 Oct 22	
36		Effect of change in excitation of a synchronous motor,	1 Nov 22	
37		Concept of hunting, causes and prevention of hunting in Synchronous Motor	2 Nov 22	
38		Application of synchronous motor as synchronous condenser, other applications of synchronous motor	3 Nov 22	
39			4 Nov 22	
40		V-curve of synchronous motor	7 Nov 22	
41			8 Nov 22	
42		**Numerical Practice & Review**	9 Nov 22	
43			10 Nov 22	
44		**Class Test-2**	11 Nov 22	CT-2
45	Single Phase Motors	Production of rotating field in 1-phase induction motor: double field revolving theory and cross field theory	14 Nov 22	
46			15 Nov 22	
47			16 Nov 22	
48		Operating Principle, Constructional features and Applications of Split–phase, capacitor start, capacitor-start capacitor-run, and Shaded Pole motors	17 Nov 22	
49			18 Nov 22	
50		Reluctance Motor: Construction, working principle & Applications	25 Nov 22	
51		Hysteresis Motor: Construction, working principle & Applications	28 Nov 22	
52		Universal Motor: Construction, working principle & Applications	29 Nov 22	
53	Special Purpose Motors	Linear Induction Motor	30 Nov 22	
54		Permanent Magnet Brushless DC Motor	1 Dec 22	
55		Servo Motor (AC and DC)	2 Dec 22	
56			5 Dec 22	
57		Stepper Motors	6 Dec 22	
58			7 Dec 22	
59			8 Dec 22	
60	**Review**	Three Phase Induction Motors	9 Dec 22	
61			12 Dec 22	
62		Synchronous Generator (Alternator)	13 Dec 22	
63			14 Dec 22	
64		Synchronous Motor	15 Dec 22	
65			16 Dec 22	
66		Single Phase Motors	19 Dec 22	
67		Special Purpose Motors	20 Dec 22	

Subject Teacher 17/Aug/22

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Lesson Plan

Electrical Engineering Department

Sem: 5th (N-17) EPS-II Date:

Lectures =4, Practical = -- (per week)

Sr.No	Chapter	Topics	Date	Remarks
1	1	Single line diagram of Electrical Power Supply System	2 Sep 21	fri
2	1	Single line diagram of Electrical Power Supply System	3 Sep 21	sat
3	1	Advantages of high voltage transmission	5 Sep 21	mon
4	1	Advantages of high voltage transmission	6 Sep 21	tue
5	1	Various systems of electrical power transmission: DC system, 1-phase AC system, 2-phase ac system, 3-phase AC system	9 Sep 21	
6	1	Various systems of electrical power transmission: DC system, 1-phase AC system, 2-phase ac system, 3-phase AC system	12 Sep 21	
7	1	Comparison between AC and DC system for transmission of electrical power	13 Sep 21	
8	1	Comparison between AC and DC system for transmission of electrical power	16 Sep 21	
9	2	Types of line supports, types of conductors, earth wire and their accessories	17 Sep 21	
10	2	Types of line supports, types of conductors, earth wire and their accessories	19 Sep 21	
11	2	Insulator, selection of insulator, string efficiency of suspension type insulator	20 Sep 21	
12	2	Insulator, selection of insulator, string efficiency of suspension type insulator	23 Sep 21	
13	2	ACSR Conductor, Bundled conductors, Transposition of 3-phase line	24 Sep 21	
14	2	ACSR Conductor, Bundled conductors, Transposition of 3-phase line	26 Sep 21	
15	2	Span length, Sag and stress calculation, Stringing chart, Sag template, effects of wind and ice on Sag (numerical)	27 Sep 21	
16	2	Span length, Sag and stress calculation, Stringing chart, Sag template, effects of wind and ice on Sag (numerical)	30 Sep 21	
17	2	Span length, Sag and stress calculation, Stringing chart, Sag template, effects of wind and ice on Sag (numerical)	1 Oct 21	
18	3	Choice of working voltage for transmission	3 Oct 21	
19	3	Choice of working voltage for transmission	4 Oct 21	
20	3	Economic size of line conductor- Kelvin's law	7 Oct 21	
21	3	Economic size of line conductor- Kelvin's law	10 Oct 21	

22	3	Inductance of a conductor due to internal flux and external flux	11 Oct 21	
23	3	Inductance of a conductor due to internal flux and external flux	14 Oct 21	
24	3	Inductance of a single phase two-wire line and of three phase line	15 Oct 21	
25	3	Inductance of a single phase two-wire line and of three phase line	17 Oct 21	
26	3	Capacitance of three phase line, charging current due to capacitance	18 Oct 21	
27	3	Capacitance of three phase line, charging current due to capacitance	21 Oct 21	
28	3	Skin effect, Ferranti effect, proximity effect in conductors of transmission line	22 Oct 21	
29	3	Skin effect, Ferranti effect, proximity effect in conductors of transmission line	24 Oct 21	
30	3	Corona: factor affecting, advantages and disadvantages, corona power losses and methods to reduce the corona	29 Oct 21	
31	3	Corona: factor affecting, advantages and disadvantages, corona power losses and methods to reduce the corona	31 Oct 21	
32	4	Substation: Indoor and outdoor substations, equipment for substation, auxiliary supply	1 Nov 21	
33	4	Substation: Indoor and outdoor substations, equipment for substation, auxiliary supply	4 Nov 21	
34	4	Distribution Systems: Radial, ring mains and inter-connected distribution system	5 Nov 21	
35	4	Distribution Systems: Radial, ring mains and inter-connected	7 Nov 21	
36	4	Comparison of AC and DC distribution system	8 Nov 21	
37	4	Comparison of AC and DC distribution system	11 Nov 21	
38	5	Advantages and disadvantages of underground system with respect to overhead system	14 Nov 21	
39	5	Advantages and disadvantages of underground system with respect to overhead system	15 Nov 21	
40	5	Advantages and disadvantages of underground system with respect to overhead system	18 Nov 21	
41	5	Underground Cables: Types of cables, construction of cables, grading of cables, capacitance, ratings, thermal characteristics and applications	19 Nov 21	
42	5	Underground Cables: Types of cables, construction of cables, grading of cables, capacitance, ratings, thermal characteristics and applications	21 Nov 21	
43	5	Underground Cables: Types of cables, construction of cables, grading of cables, capacitance, ratings, thermal characteristics and applications	22 Nov 21	
44	6	Necessity of EHV Transmission	25 Nov 21	
45	6	Necessity of EHV Transmission	26 Nov 21	
46	6	Limitation of EHV-AC Transmission System	28 Nov 21	
47	6	Limitation of EHV-AC Transmission System	29 Nov 21	

48	6	Basic Concepts of HVDC System	2 Dec 21	
49	6	Limitation of HVDC Transmission	3 Dec 21	
50	6	Limitation of HVDC Transmission	5 Dec 21	
51	6	Comparison between EHV-AC and HV-DC Transmission	6 Dec 21	
52	6	Comparison between EHV-AC and HV-DC Transmission	9 Dec 21	
53	7	Concept of power factor	12 Dec 21	
54	7	Causes and effects of low power factor in power system	13 Dec 21	
55	7	Methods to improve power factor: Synchronous condenser, Static	16 Dec 21	
56	7	Methods to improve power factor: Synchronous condenser, Static	17 Dec 21	
57		Revision Classes	19 Dec 21	
58		Revision Classes	20 Dec 21	

Signature of Teacher

Signature of HOD
27/8/21

Lesson Plan

Electrical Engineering Department

Sem: 5TH SEM (N-17) — **Power Electronics & control of Drives** — Date:

Lectures =4, Practical = 4 (per week)

Sr.No.	Chapter	Topics	Date	Remarks
1	1. Power Semiconductor Devices	Advantages of Power Electronics devices based control over conventional control	1 Sep 22	
2		Construction, Operation, Symbol & V-I Characteristics of Silicon Controlled Rectifier (SCR)	3 Sep 22	
3		Thyristor Specifications and Ratings: Voltage Ratings, Current Ratings, Power Ratings and Temperature Ratings. Turn ON &Turn- OFF time	6 Sep 22	
4		Thyristor Turn On (Triggering) Methods: Voltage Triggering, Gate Triggering, dv/dt Triggering and Radiation Triggering.	7 Sep 22	
5		Thyristor Turn off Process (Commutation techniques)	8 Sep 22	
6		series and parallel connection of SCRs: its need and criteria	13 Sep 22	
7		Heat Sinks- Function/need of Heat Sink, Types of Mountings	14 Sep 22	
8		Thyristor Family: Symbols, Construction, Operation & V-I Characteristics of TRIAC	15 Sep 22	
9		Diac and ujt	17 Sep 22	
10		UJT Relaxation Oscillator: Circuit description and Working	20 Sep 22	
11	2. Converters	Difference between Uncontrolled rectifier & Controlled rectifier	21 Sep 22	
12		Single Phase Half Wave Controlled Converter	22 Sep 22	
13		(a) With Resistive Load	24-Sep-22	
14		(b)With RL Load and Freewheeling Diode	27-Sep-22	
15		Single Phase Fully Controlled Full Wave Converter	28-Sep-22	
16		(a) with Resistive load	29-Sep-22	
17		(b)With RL Load (with & without free wheeling diode)	01-Oct-22	
18		Three phase Fully controlled Bridge Converter	04-Oct-22	
19		Comparison of 3 phase and 1-PhaseConverters	06-Oct-22	
20		Cycloconverters (50 Hz to 25 Hz, 16.33Hz, 12.5Hz)	11-Oct-22	
21		Introduction, classification, working principle and applications	12-Oct-22	
22		Dual Converters (1-phase & 3-phase): Classification, working principle and applications	13-Oct-22	
23	3. Inverters	Working Principle of Inverter	15-Oct-22	
24		Series Inverter	18 Oct 22	
25		Operation of Series Inverter Circuit	19 Oct 22	
26		Parallel Inverter	20 Oct 22	
27		Operation of Parallel Inverter Circuit	22 Oct 22	
28		Single Phase Bridge Inverter, Half bridge inverter	1 Nov 22	
29		full bridge Inverter	2 Nov 22	
30	4. Choppers	Working Principle of Chopper, Duty Cycle of Chopper	3 Nov 22	
31		Types of Duty Cycle Control	5 Nov 22	

32	4. Choppers (DC to DC Converters)	Constant Frequency System	9 Nov 22	
33		Variable Frequency System	10 Nov 22	
34		Classification of Choppers	15 Nov 22	
35		Class A, Class B, Class C, Class D and Class E: Their Circuit description	16 Nov 22	
36		Applications of Choppers	17 Nov 22	
37	5. Power Electronic Applications in Control of Drives	DC Drives: Speed control of DC motors with Single phase	19 Nov 22	
38		Three-phase controlled converters, Speed Control of DC motors using Chopper circuit.	29 Nov 22	
39		AC Drives: Speed control of three-phase Induction Motor with Variable voltage,	30 Nov 22	
40		variable frequency (VVVF Drives) using power electronics devices	1 Dec 22	
41	6. Other Applications of Power Electronics based Devices	Automatic Street Light Control using Thyristors	3 Dec 22	
42		Battery Charging Control	6 Dec 22	
43		Static Excitation System for Alternators	7 Dec 22	
44		static ckt Breaker (AC& DC)	8 Dec 22	
45		REVIEW and DISCUSSION	13 Dec 22	
46			14 Dec 22	
47			15 Dec 22	
48			17 Dec 22	

SUBJECT TEACHER

OIC/H.O.D 25/8/22

Lesson Plan

NON-CONVENTIONAL ENERGY RESOURCES

Total Planned Lectures = 62 | Electrical Engineering | Semester =5th

Sr.No.	Chapter	Topics	Date	Remarks
1	Introduction	Importance of Non-conventional sources of energy	1 Sep 22	
2		Present energy scenario	2 Sep 22	
3		Role of non-conventional or renewable energy sources in present energy scenario		
4			3 Sep 22	
5	Solar Energy	Principle of conversion of solar radiation into heat	7 Sep 22	
6		Photo-Voltaic Cell	8 Sep 22	
7		Electricity generation using Solar Energy	9 Sep 22	
8		Applications of Solar Energy: Solar water heaters, Solar Furnaces, Solar cookers, Solar lighting, Solar pumping	14 Sep 22	
9			15 Sep 22	
10			16 Sep 22	
11			17 Sep 22	
12	Hydro Energy	Main elements of small (Mini and Micro) hydro-electric power generation system,	21 Sep 22	
13			22 Sep 22	
14		control requirements in small hydro power plants	23 Sep 22	
15			24 Sep 22	
16		Advantages of small hydro power plants over large hydro power generation systems	28 Sep 22	
17			29 Sep 22	
18	Bio-Energy	Bio-mass Conversion Technologies: Wet and Dry processes	30 Sep 22	
19			1 Oct 22	
20		Methods for obtaining energy from biomass	6 Oct 22	
21			7 Oct 22	
22		Power generation using biomass gasifier	12 Oct 22	
23	Wind Energy	Wind Energy Conversion system	13 Oct 22	
24		Types of wind mills	14 Oct 22	
25		electricity generation using wind mills	15 Oct 22	
26			19 Oct 22	
27		**Class Test-1**	20 Oct 22	
28		control mechanism in wind energy conversion system, and energy storage systems	21 Oct 22	
29			22 Oct 22	
30			26 Oct 22	
31	Geo-Thermal and Tidal Energy	Geo-thermal sources	27 Oct 22	
32		Ocean thermal electric conversion	28 Oct 22	
33		open and closed cycles	29 Oct 22	
34		hybrid cycles	2 Nov 22	
35		Tidal power basics and schemes of electricity generation using tidal power	3 Nov 22	
36			4 Nov 22	
37			5 Nov 22	
38	Magneto Hydro Dynamic (MHD) Power Generation	Introduction	9 Nov 22	
39		working principle and MHD system	10 Nov 22	
40		**Class Test-2**	11 Nov 22	
41		working principle and MHD system	16 Nov 22	
42	Chemical Energy	Principle of working of fuel cell	17 Nov 22	
43			18 Nov 22	
44		conversion efficiency	19 Nov 22	
45			23 Nov 22	
46		work output and emf of fuel cells	24 Nov 22	
47			25 Nov 22	
48		applications of fuel cells	26 Nov 22	
49	Thermo Electric Power	Basic working principle of thermo-electric power	30 Nov 22	
50			1 Dec 22	
51		Thermo-electric power generation	1 Dec 22	
52			2 Dec 22	
53		thermoelectric materials and their application	3 Dec 22	
54			7 Dec 22	
55	Review	**Solar Energy**	8 Dec 22	
56			8-20 dec	
57				
58		**Hydro Energy , Bio Energy**		
59				
60		**Wind Energy , Geo-Thermal and Tidal Energy , MHD Power Generation**		
61				
62		**Chemical Energy , Thermo Electric Energy**		

Subject Teacher

HOD / OIC EE

25/8/22.