

Govt. Polytechnic, Dhangar
Electrical Engineering Department
Lesson plan

Name of Faculty		RISHI PAYAL		
Discipline		Electrical Engineering		
Semester		3rd		
Subject		Electronics-II		
Work load (Theory + Practical) Per Week		[03 + 02]		
Week	Day	Theory Topic/ Assignment/ Test	No.	Practical
1st	1	Unit:1 Transistor Audio Power Amplifier	1	To study the effect of coupling capacitor on lower cut off frequency and upper cut off frequency by plotting frequency response curve of a two stage RC coupled amplifier
	2	Difference between voltage and power amplifier		
	3	Terms in Power Amplifier, collector efficiency, distortion and dissipation capability		
2nd	1	Classification of power amplifier class A, B and C	2	To measure (a) optimum load (b) output power (c) signal handling capacity of a push-pull amplifier
	2	Class A single-ended power amplifier, its working and collector efficiency Impedance matching in a power amplifier using transformer		
	3	Heat sinks in power amplifiers, Push-pull amplifier: circuit details working and advantages		
3rd	1	Principles of the working of complementary symmetry push-pull amplifier	3	To measure (a) voltage gain (b) input and output impedance for an emitter follower circuit
	2	Revision/Assignment of 1st unit		

	3	Class test of 1 st unit		
4 th	1	Unit-2 Introduction to tuned voltage amplifier	4	Practical Quiz No.2/ Revision and file checking
	2	Series and parallel resonance, Single and double tuned voltage amplifiers		
	3	Frequency response of tuned voltage amplifiers, Applications of tuned voltage amplifiers		
5 th	1	Revision/Assignment of 2 nd unit	5	To measure frequency generation in (a) Hartley (b) R-C Phase Shift oscillator
	2	Class test of 2 nd unit		
	3	Unit3: Feedback in Amplifiers positive and negative feedback and their need		
6 th	1	Voltage gain of an amplifier with negative feedback $A = A/(1+ A)$	6	Practical Quiz No.3/ Revision and file checking
	2	Effect of negative feedback on voltage gain, stability, distortion, band width		
	3	Output and input impedance of an amplifier		
7 th	1	Typical feedback circuits	7	To observe the differentiated and integrated square wave on a CRO for different values of R-C time constant
	2	Effect of removing the emitter by-pass capacitor on a CE transistor amplifier		
	3	Emitter follower and its applications		
8 th	1	Revision/Assignment of 3 rd unit		Clipping of both portion of sine-
	2	Unit4: Sinusoidal oscillators amplifier positive		

		feedback		wave using: diode and dc source/ Zener diodes
	3	Difference between an oscillator and an alternator	8	
9 th	1	Essentials of an oscillator, Circuit details and working of LC oscillators	9	Clamping a sine-wave to: Negative dc voltage Positive dc voltage
	2	Tuned Collector, Hartley		
	3	and Colpitt's oscillators, R-C oscillator circuits		
10 th	1	phase shift and Wein bridge oscillator circuits	10	Practical Quiz No.3/ Revision and file checking
	2	Introduction to piezoelectric crystal and crystal oscillator circuit		
	3	Revision/Assignment of 4 th unit		
11 th	1	Wave-Shaping and Switching Circuits	11	To generate square-wave using an astable multivibrator and to observe the wave form on a CRO
	2	Concept of Wave-shaping circuits		
	3	R-C differentiating and integrating circuits		
12 th	1	Diode clipping circuits, Diode clamping circuits	12	To observe triggering and working of a bistable multivibrator circuit and observe its output wave form on a CRO
	2	Applications of wave-shaping circuits, Transistor as a switch		
	3	Collector coupled astable, monostable, Bistable multivibrator circuits		
13 th	1	Working and applications of transistor inverter circuit using power transistors	13	Practical Quiz No.3/ Revision and file checking

	2	Revision/Assignment of 5 th unit		
	3	Unit6: Working Principles of different types of power supplies viz. CVTs		
14	1	IC voltage regulators(78xx,79xx)	14	Op-Amp (IC 741) as inverting and non-inverting amplifier, adder Comparator, integrator and differentiator verify using p-spice
	2	Revision/Assignment of 6 th unit		
	3	Unit7: Operational Amplifier, differential amplifier		
15 th	1	Emitter coupled differential amplifier Offset even voltages and currents	15	To study the pin configuration and working of IC 555 and its use as mono stable and astable multi - vibrator
	2	Integrator and differentiator, Summer, Subtractor		
	3	Familiarization with specifications and pin configuration of IC 741		
16 th	1	Block diagram and operation of 555 IC timer	16	Internal Practical/viva-voice evaluation
	2	HSBTE old paper solution		
	3	HSBTE old paper solution		

LESSON PLAN

Name of the faculty	:	Mr. Mannu Lal H.O.D in Electrical Engg.
Discipline	:	Electrical Engg.
Semester	:	3 rd
Subject	:	Estimating and Costing in Electrical Engineering (ECEE)
Lesson Plan Duration	:	15 weeks
Work Load	:	Lectures — 03

Week	Theory	
	Lecture Day	Topic (including assignment/test)
1 st	1 st	Purpose of estimating and costing, proforma for making estimates.
	2 nd	Preparation of materials schedule, costing and price list.
	3 rd	Preparation of tender document (with 2-3 exercises).
2 nd	4 th	Net price list, market survey, overhead charges and labour charges.
	5 th	Electrical point method and fixed percentage method.
	6 th	Contingency, profit, purchase system, enquiries and comparative statements, Orders for supply and payment of bills.
3 rd	7 th	Tenders – its constituents, finalization and specimen tender.
	8 th	Wiring Types—Cleat, batten and casing capping.
	9 th	Conduit wiring and comparison of different wiring systems.
4 th	10 th	Selection and design of wiring schemes for particular situation (domestic and industrial).
	11 th	Selection of wires and cables, Wiring accessories.
	12 th	Use of MCB and ELCB, Use of wire-gauge and tables, assignment submission.
5 th	13 th	Domestic installations; description of various tests to test the wiring installation before commissioning.
	14 th	—Continued—description of various tests to test the wiring installation before commissioning.
	15 th	Standard practice as per IS and IE rules. Planning of circuits, sub-circuits.
6 th	16 th	Position of different accessories.
	17 th	Sub-circuits and position of different accessories.
	18 th	Numerical practice for planning of sub-circuits (including wiring schemes).

7 th	19 th	Electrical layout of single storey and multi-storey buildings having similar electrical load.
	20 th	Preparing estimates including cost as per schedule rate pattern and actual market rate. (single storey and multi-storey buildings having similar electrical load).
	21 st	Numerical practice and taking doubts related to cost estimation for wiring of single storey and multi-storey buildings.
8 th	22 nd	Industrial installations: relevant IE rules and IS standard practices.
	23 rd	Planning, designing and estimation of installation of single phase motors of different ratings.
	24 th	Electrical circuit diagram and starters, Preparation of list of materials.
9 th	25 th	Estimating and costing exercises on workshop with single-phase, 3-phase motor load and the light load (3-phase supply system).
	26 th	Numerical practice for estimating cost of wiring for single phase motors of different ratings.
	27 th	Taking doubts related to cost estimation for wiring of single phase and three phase motors of different ratings and assignment submission.
10 th	28 th	Service line connections: Over-head and underground connections from pole to energy meter.
	29 th	—Continued—Service line connections: Over-head and underground connections from pole to energy meter (Types of Service Connections).
	30 th	Service line connections estimate for domestic.
11 th	31 st	Service line connections estimate for industrial.
	32 nd	Estimating the material required for transmission lines (overhead and underground) planning
	33 rd	Estimating the material required for distribution lines (overhead and underground) planning.
12 th	34 th	Designing of lines with different fixtures, Earthing of lines (based on unit cost calculations).
	35 th	Substation: Types of sub-stations, Substation schemes and components.
	36 th	Estimate of 11/0.4 KV pole mounted sub-station up to 200 KVA rating.
13 th	37 th	Methods of earthing of substations.
	38 th	Key Diagram of 66 KV/11KV, 11 KV/0.4 KV sub-stations.
	39 th	Outdoor and indoor sub-stations.

14 th	40 th	Single line diagram and layout sketching of outdoor, indoor 11kV, 33kV sub-station.
	41 st	Taking doubts related to indoor and outdoor sub-stations and checking of note book (Assignment).
	42 nd	Exercise- Preparation of tender documents
15 th	43 rd	Tender – constituents, finalization.
	44 th	Specimen tender.
	45 th	Taking doubts related to tender documents preparation and checking of note book.

Lesson plan

Name:- Mr. Deepak

Discipline:- Electrical

Semester:- 3rd

Subject:- NCSE

Lesson plan duration:- 15 Weeks

Work Load Lecture Per Week (in hours) :- Lectures-04

Week	Theory	
	Lecture Day	Topic(including assignment test)
1st	1st	Introduction, classification of energy(primary and secondary resources)
	2nd	commercial and non commercial energy, characteristics of energy, renewable and non renewable energy sources
	3rd	Present scenario ,future prospects and economics, criteria of renewable source of energy
	4th	projected energy consumption of india for 2030
2nd	5th	solar energy and it's sources, principal of conversion solar radiations into heat or green house effect
	6th	photo voltaic cell it's working , V-I characteristics and efficiency
	7th	Generation of electricity , application of solar energy
	8th	revision and class test
3rd	9th	Bio-energy biomass
	10th	biomass conservation technology
	11th	application of biomass
	12th	direct and thermo chemical conservation method
4th	13th	bio chemical conservation method
	14th	Gasifier
	15th	steps of gasification
	16th	advantages and types of gasifier
5th	17th	revision and class test
	18th	Wind energy
	19th	Wind energy conservation
	20th	Wind mills, types
6th	21st	Electricity generation for wind energy
	22nd	Classification of wind power plants
	23rd	selection of site for wind power plants
	24th	advantages and disadvantages of wind power plants
7th	25th	energy storage
	26th	Geo thermal and tidal energy
	27th	Geo thermal energy sources
	28th	prime mover for geothermal energy conversion
8th	29th	power generation by geothermal source
	30th	Advantages and disadvantages of geothermal energy
	31st	ocean energy -ocean thermal-energy conversion
	32nd	tidal energy

9th	33rd	Sea waves
	34th	class test and revision
	35th	Magneto Hydro Dynamic (MHD)-working
	36th	advantages and disadvantages of MHD
10th	37th	Types of MHD generation system
	38th	Fuel cell -working principle
	39th	Direct methanol fuel cell
	40th	Hydrazine fuel cell
11th	41st	Hydrocarbon ode cell
	42nd	Hydrogen oxygen fuel cell
	43rd	efficiency and work output
	44th	cell voltage
12th	45th	fuel cell performance
	46th	application of fuel cell
	47th	advantage and disadvantages of fuel cell
	48th	revision and class test
13th	49th	Hydro energy Mini & micro hydro plants
	50th	Micro Hydro Plant(MHP)_
	51st	advantages of MHP
	52nd	micro hydro plants
14th	53rd	Composition of a mini hydro electric plant
	54th	Energy conservation and management , need of energy conservation
	55th	Environmental aspects , energy efficiency
	56th	Fluorescent tube , CFL ,LED
15th	57th	Need of energy efficient devices
	58th	Energy conservation in domestic sector, in home appliances, in industrial sector, in agriculture sector
	59th	Macro level approach for energy conservation at design stage
	60th	Revision and class test

LESSON PLAN

Name of the faculty	:	Mr. Lokesh
Discipline	:	Electrical Engg.
Semester	:	3 rd
Subject	:	Electrical Engineering Design and Drawing – I (EEDD-I)
Lesson Plan Duration	:	15 weeks
Work Load	:	Practicals — 06

Week	Practical	
	Practical Day	Topic
1 st	1 st	Drawing of various Electrical Symbols used in Domestic and Industrial Installation.
	2 nd	Drawing of Electrical Symbols used in Power System (Generation, Transmission and Distribution including Sub-stations).
2 nd	3 rd	Problem solving session including sheet checking and viva-voce for Unit-1.
	4 th	Drawing of Wiring diagram of light & sheet checking.
3 rd	5 th	Drawing of Wiring diagram of fan & sheet checking.
	6 th	Drawing of Wiring diagram of bell & sheet checking.
4 th	7 th	Drawing of Wiring diagram of alarm circuits & sheet checking.
	8 th	Drawing of Staircase wiring & sheet checking.
5 th	9 th	Drawing of godown wiring & sheet checking.
	10 th	Problem solving session including sheet checking and viva-voce for Unit-2.
6 th	11 th	Design and Drawing of panels/Distribution board using MCB, ELCB main switches and change over switches for domestic installation & sheet checking.
	12 th	Design and Drawing of panels/Distribution board using MCB, ELCB main switches and change over switches for industrial installation & sheet checking.
7 th	13 th	Design and Drawing of panels/Distribution board using MCB, ELCB main switches and change over switches for commercial installation & sheet checking.
	14 th	Checking of drawing sheet, taking doubts of the students and to give clarifications on the specific parts they have not understood.

8 th	15 th	Problem solving session including sheet checking and viva-voce for Unit-3.
	16 th	Orthographic projections of Bus bar post/ Kit Kat & sheet checking.
9 th	17 th	Orthographic projections of Pin type and shackle type insulator (Pin Type 11kV/66kV) & sheet checking.
	18 th	Orthographic projections of Bobbins of a small transformer / choke & sheet checking.
10 th	19 th	Orthographic projections of Stay insulators/Suspension type insulators & sheet checking.
	20 th	Orthographic projections of Rotor of a squirrel cage induction motor & sheet checking.
11 th	21 st	Orthographic projections of Motor body (induction motor) as per IS Specifications (using outside dimensions) & sheet checking.
	22 nd	Orthographic projections of Slip rings of 3-phase induction Motor & sheet checking.
12 th	23 rd	Orthographic projections of Stator of 3 phase Induction motor (Sectional View) & sheet checking.
	24 th	Problem solving session including sheet checking and viva-voce for Unit-4.
13 th	25 th	Basic of Auto CAD software.
	26 th	Prepare wiring diagram and block diagrams for circuits/systems using any Engineering Graphic package (Auto CAD).
14 th	27 th	-Continued- Prepare wiring diagram and block diagrams for circuits/systems using any Engineering Graphic package (Auto CAD).
	28 th	Drawing of wiring diagram using Auto CAD.
15 th	29 th	Problem solving session including sheet checking and viva-voce for Unit-5.
	30 th	Checking of drawing sheet, taking doubts of the students and to give clarifications on the specific parts they have not understood.

Electrical Engineering Department
Lesson plan (for odd-semester as per revised curriculum and study scheme)

Name of Faculty		Ms. Monika Mehta
Discipline		Electrical Engineering
Semester		3 rd (odd- semester)
Subject		Electrical and Electronics Engineering Materials
Lesson Plan Duration		2022 - 2023
Work load (Theory + Practical) Per Week		(04+00)
Week	Day	Topics
1 st	1	Introduction to Classification of materials
	2	Classification of Conducting ,semi conducting and insulating materials based on atomic structure
	3	Classification based on energy bands
	4	Revision and Class test of 1 st unit
2 nd	1	Introduction to Conducting Materials Resistance and factors affecting it Such as alloying and temperature
	2	Classification of conducting material as low resistivity and high resistivity materials
	3	low resistance materials Copper: General properties as conductor resistivity, temperature coefficient and density
	4	Mechanical properties of hard-drawn and annealed copper corrosion, contact resistance
3 rd	1	Application of copper in the field of electrical engineering.
	2	Aluminum: General properties as resistivity, temperature coefficient, density
	3	Mechanical properties of hard and annealed aluminum, solder ability, contact resistance
	4	Applications in the field of electrical engineering.
4 th	1	Steel: Mechanical properties of steel
	2	Applications in the field of electrical engineering.
	3	Introduction to bundle conductors and its applications
	4	Low resistivity copper alloys Brass, Bronze and their applications
5 th	1	Applications of special metals e.g. Silver, Gold, Platinum etc
	2	High resistivity materials and their applications constantan,
	3	Nichrome, mercury, platinum, carbon and tungsten
	4	Superconductors and their applications
6 th	1	Revision and problem related to 2 nd unit
	2	Class Test of 2 nd unit
	3	Review of Semi-conducting Materials, Semi-conductors and their properties
	4	Materials used for electronic components like resistors, capacitors, diodes, transistors and inductors etc
7 th	1	Revision and problem related to 3 rd unit
	2	Class Test of 3 rd unit
	3	Insulating materials; General Properties
	4	Electrical Properties :Resistivity, surface resistance, dielectric loss, dielectric strength
8 th	1	Physical Properties Hygroscopicity, tensile and compressive strength, abrasive resistance, brittleness
	2	Thermal Properties: Heat resistance, classification according to permissible temperature rise
	3	Chemical Properties: Solubility, chemical resistance, weather ability
	4	Mechanical properties, mechanical structure, tensile structure
9 th	1	Revision and problem related to 4 th unit
	2	Class Test of 4 th unit
	3	Introduction to Insulating Materials and their applications

	4	Plastics Definition and classification
10 th	1	Thermosetting materials: Bakelite, amino resins, epoxy resins their important properties and applications
	2	Thermo-plastic materials: PVC, Polyethylene, silicones, their important properties and applications
	3	Natural insulating materials, properties and their applications
	4	Mica and Mica products, Asbestos and asbestos products, Ceramic materials
11 th	1	Glass and glass products Cotton, silk, jute, paper, Rubber, Bitumen
	2	Mineral and insulating oil for transformer, insulating varnish for coating and impregnation
	3	Gaseous materials; Air, Hydrogen, Nitrogen, SF their properties and applications
	4	Revision and problem related to 5 th unit
12 th	1	Class Test of 5 th unit
	2	Magnetic Materials: Introduction, Ferromagnetic materials, permeability
	3	B-H curve, magnetic saturation, hysteresis loop including coercive force and residual magnetism
	4	Concept of eddy current and hysteresis loss, Curie temperature, magnetostriction effect.
13 th	1	Soft Magnetic Materials: Alloyed steels with silicon: High silicon alloy steel for transformers
	2	low silicon alloy steel for electric rotating machines
	3	Cold rolled grain oriented steels for transformer, Non-oriented steels for rotating machine, Nickel-iron alloys, Soft Ferrites
	4	Hard magnetic materials Tungsten steel, chrome steel , hard ferrites cobalt and Steel applications.
14 th	1	Revision and problem related to 6 th unit
	2	Class Test of 6 th unit
	3	Special Materials Thermocouple, bimetals
	4	leads soldering and fuses material and their applications
15 th	1	Revision and problem related to 7 th unit
	2	Introduction of various engineering materials necessary for fabrication of electrical machines
	3	such as motors, generators, transformers etc.
	4	Revision and problem related to 8 th unit
16 th	1	Class Test of 8 th unit
	2	Viva-voice related to subject
	3	Revision/Review/Test of old HSBTE Papers
	4	Revision/Review/Test of old HSBTE Papers

