

DE (EE-206L) & DE Lab (EE-206P)

Week	Theory		Practical	
	Lecture Day	Topic (Including assignment / Test)	Practical Day	Topic
Unit-I				
1 st	1	FUNDAMENTALS OF DIGITAL TECHNIQUES	1	Study of TTL gates – AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR
	2	Introduction to Signal and its types		
	3	Analog and Digital Signal		
	4	Introduction to logic gates		
2 nd	5	AND, OR, NOT	2	Design & realize a given function using K-maps and verify its performance
	6	NAND, NOR, EX-OR		
	7	EX-NOR, and their applications		
	8	Related Problem Analysis		
3 rd	9	Boolean algebra and Numerical problems	3	To verify the operation of multiplexer & Demultiplexer.
	10	Review of Number systems.		
	11	Binary codes: BCD, Excess-3, Gray, EBCDIC		
	12	ASCII, Error detection and correction codes.		
Unit-II				
4 th	13	COMBINATIONAL DESIGN USING GATES	4	To verify the operation of comparator
	14	Design using gates, Karnaugh map		
	15	Numerical Problems		
	16	Quine McCluskey methods of simplification		
5 th	17	Numerical Problems	5	To verify the truth tables of S-R, J-K, T & D type flip flops.
	18	COMBINATIONAL DESIGN USING MSI DEVICES		
	19	Multiplexers and Demultiplexers		
	20	And their use as logic elements		
6 th	21	Decoders, Adders / Subtractors	6	To verify the operation of bi-directional shift register
	22	BCD arithmetic circuits		
	23	Encoders, Decoders		
	24	Drivers for display devices		
7 th	1st Minor Test			
Unit-III				
8 th	25	SEQUENTIAL CIRCUITS: Flip-Flops	7	Viva-Voice 1st
	26	S-R, J-K, T, D, master-slave, edge triggered		
	27	Shift registers, sequence generators, Counters		
	28	Asynchronous and Synchronous Counters.		
9 th	29	Ring counters and Johnson Counter	8	To design & verify the operation of 3-bit synchronous counter.
	30	Design of Synchronous Asynchronous circuits		
	31	A/D AND D/A CONVERTERS Sample and hold ckt.		
	32	Weighted resistor and R -2 R ladder D/A Converters		
10 th	33	Specifications for D/A converters. A/D converters	9	To design and verify the operation of synchronous UP/DOWN decade counter using J K flip-flops & drive a seven-segment display using the same
	34	Quantization, parallel –comparator		
	35	Successive approximation, counting type.		
	36	Dual-slope ADC, specifications of ADCs.		
Unit-IV				

11 th	37	DIGITAL LOGIC FAMILIES	10	To design and verify the operation of asynchronous UP/DOWN decade counter using J K flip-flops & drive a seven-segment display using the same.
	38	Switching mode operation of p-n junction		
	39	Bipolar and MOS. Devices		
	40	Bipolar logic families		
12 th	41	Introduction to RTL, DTL	11	To design & realize a sequence generator for a given sequence using J-K flip-flops.
	42	Introduction to DCTL, HTL		
	43	Introduction to TTL, ECL		
	44	MOS, and CMOS logic families		
13 th	45	Introduction Tristate logic,	12	Design a 4-bit shift-register and verify its operation . Verify the operation of a ring counter and a Johnson counter.
	46	Interfacing of CMOS and TTL Faimily		
	47	PROGRAMMABLE LOGIC DEVICES		
	48	Introduction to RAM, ROM.		
14th	2nd Minor test			
15 th	49	Differentiate between RAM and ROM	13	Viva-Voice 2nd
	50	Introduction to PLA, PAL		
	51	Introduction to FPGA and CPLDs		
	52	Related Problem Discussion.		

ELECTRICAL ENGINEERING MATERIAL AND SEMICONDUCTOR DEVICE (EE-202-L)

Week	Theory	
	Lecture Day	Topic (Including assignment / Test)
Unit-I		
1 st	1	Introduction to conducting materials
	2	Review of energy bands
	3	Description of materials
	4	Drift velocity, collision time,
2 nd	5	Mean free path, mobility
	6	Introduction to conductivity
	7	Relaxation time
	8	Factor affecting conductivity of materials
3 rd	9	Types of thermal conductivity
	10	Wiedmann-Franz law
	11	Super conductivity, effect of magnetic field
	12	Application of conducting materials
Unit-II		
4 th	13	Introduction to dielectric materials
	14	Behaviour of dielectric materials in static electric field
	15	Dipole moments, polarization, Dielectric constant
	16	Polarizability, Susceptibility
5 th	17	Mechanisms of polarization, behavior in alternating field
	18	Dielectric loss, loss tangent
	19	Types of dielectric and insulating materials
	20	Electrostriction, piezo-electricity, application
6 th	21	Introduction to magnetic materials: permeability, magnetic susceptibility
	22	magnetic moment, magnetization
	23	Dipole moment, types of magnetic materials, magnetostriction
	24	Eddy current & hysteresis losses, application
7th	1st Minor Test	
Unit-III		
8 th	25	Discussion on 1 st minor test questions
	26	Introduction to semiconductor materials
	27	Review of Si & Ge as semiconductor materials, continuity equation
	28	P-N junction, drift & diffusion
9 th	29	Diffusion & transition capacitances of P-N junction
	30	Brief introduction to planar technology for device fabrication
	31	Metal-semiconductor junction (ohmic and non- ohmic)
	32	Breakdown mechanisms in p-n junction
10 th	33	Introduction to zener diode and application
	34	Electrical and optical excitation in diodes
	35	Introduction to LED
	36	Solar cells and photo-detectors
Unit-IV		
11 th	37	Introduction to BJT
	38	Types of BJT and its operation
	39	Different modes of operation of BJT

	40	Introduction to UJT
12 th	41	Characteristic of UJT & its applications
	42	Introduction to JFET
	43	Characteristics of JFET and its biasing
	44	Introduction to MOSFET
13 th	45	Working of MOSFET in depletion mode
	46	Working of MOSFET in enhancement mode
	47	Introduction to thyristors : SCR
	48	The Diac and its application
14th	2nd Minor test	
15 th	49	The Triac and its application
	50	Introduction to GTO
	51	Introduction to IGBT
	52	Introduction to VMOS

ELECTRICAL MACHINES-II (EE-210-L)
ELECTRICAL MACHINES-II LAB (EE-210-P)

Week	Theory		Practical	
	Lecture Day	Topic (Including assignment / Test)	Practical Day	Topic
Unit-I				
1 st	1	Introduction to AC machines	1	To determine the mechanical losses by light running of a three phase induction motor.
	2	Induction machines: Constructional features		
	3	Production of torque and phasor diagram		
	4	Equivalent circuit and performance analysis		
2 nd	5	Torque-slip characteristics	2	To perform load test on a three phase induction motor & DC Generator set and determine the efficiency of induction motor.
	6	Testing running light and blocked rotor test		
	7	Load test & effect of rotor resistance		
	8	Deep bar and double cage induction motor		
3 rd	9	Starting method of squirrel cage and wound rotor induction motor	3	To perform light running test and blocked rotor test on a three phase induction motor and determine the parameters of the equivalent circuit.
	10	Various methods of speed control of squirrel cage and wound rotor induction motor		
	11	Effect of space harmonics		
	12	Generator operation		
Unit-II				
4 th	13	Introduction to single phase induction motors	4	To perform open circuit test and blocked rotor test on a three phase induction motor and draw the circle diagram.
	14	Constructional features		
	15	Double revolving field theory		
	16	Equivalent circuit and determination of parameters		
5 th	17	Split phase starting methods & applications	5	To find out the rotor resistance of a poly phase induction motor.
	18	Introduction to Polyphase AC Commutator machines		
	19	Effect of voltage injection in rotor circuit of slip ring induction motor by auxiliary commutator machines		
6 th	20	Kramers arrangement	6	1 st Internal viva
	21	Scherbius arrangement		
	22	Principle & operation of doubly fed commutator motor		
	23	Schrage motor		
7 th	24	Revision	1st Minor Test	
	Unit-III			
8 th	25	Introduction to synchronous generator	7	To calculate regulation of alternator by synchronous impedance method: i. Conduct open and short circuit test on a three phase alternator. ii. Determine and
	26	Constructional features		
	27	Cylindrical rotor machine		
	28	Generated emf, Circuit model and phasor diagram		

				<p>plot variation of synchronous impedance with I_f.</p> <p>iii. Determine S.C.R.</p> <p>iv. Determine regulations for 0.8 lagging power factor, 0.8 leading power factor and unity power factor.</p>
9 th	29	Armature reaction, synchronous impedance	8	<p>To plot V-curves of a synchronous machine</p> <p>i. Determination of X_o of a synchronous machine.</p> <p>ii. Measurement $X_d' + X_q'$.</p>
	30	Voltage regulation and different methods for its estimation		
	31	Salient pole machine		
	32	Two reaction theory		
10 th	33	Analysis of phasor diagram	9	To measure X_q of synchronous machine.
	34	Power angle characteristics		
	35	Determination of X_d		
	36	Determination of X_q		
Unit-IV				
11 th	37	Need of parallel operation	10	To calculate regulation by ZPF method.
	38	Parallel operation of alternators		
	39	Synchronization		
	40	Load division		
12 th	41	Introduction to Synchronous motors	11	To conduct load test to determine performance characteristics of the induction motor.
	42	Operating principle		
	43	Working		
	44	Circuit model		
13 th	45	Phasor diagram	12	To study the parallel operation of synchronous generator.
	46	Effect of load		
	47	Operating characteristics		
	48	V-curves		
14th	2nd Minor test			
15 th	49	Inverted V-curves	13	2 nd Internal viva
	50	Starting methods		
	51	Applications		
	52	Revision		

CONTROL SYSTEM/EE-208L

Week	Theory		Practical- EE-208P	
	Lecture Day	Topic (Including assignment / Test)	Practical Day	Topic
Unit-I				
1 st	1	Open loop control system	1	Experiment to study DC position control system
	2	Closed loop control system		
	3	Servomechanism		
	4	Differential equation of physical systems		
2 nd	5	Transfer function	2	Experiment to study linear system simulator
	6	Block diagram algebra		
	7	Signal flow- graphs		
	8	Masons formula and its applications		
3 rd	9	Feedback and non-feedback systems	3	Experiment to study light intensity control using P & PI controller with provision for disturbance and transient speed control
	10	Effect of feedback on sensitivity		
	11	Stability		
	12	Overall gain		
Unit-II				
4 th	13	Standard test signals	4	Experiment to study D.C. motor speed control
	14	Time response of first order and second order system		
	15	Steady- state errors and error constants		
	16	Design specification of second-order systems		
5 th	17	Concept of stability	5	Experiment to study the stepper motor characteristics & its control through microprocessor kit
	18	Necessary conditions for stability		
	19	Hurwitz stability criterion & Routh stability criterion		
	20	Assignment on time response of first order and second order systems		
6 th	21	Relative stability analysis	6	Experiment to study temperature control system
	22	Root locus concept		
	23	Construction / development of root loci for various systems		
	24	Stability considerations		
7 th	1st Minor Test			
Unit-III				
8 th	25	Cor relation b/w time & frequency response	7	Experiment to study compensation design
	26	Polar plots		
	27	Nyquist plots		
	28	Bode plots		
9 th	29	Stability	8	Experiment to study relay control system
	30	Nyquist stability criterion		
	31	Gain margin		
	32	Phase margin		
	33	Relative stability		Experiment to study

10 th	34	Realtive stability using by Nyquist criterion	9	potentials metric error detector
	35	Frequency response		
	36	Frequency response specifications		
Unit-IV				
11 th	37	Necessity of compensation	10	Experiment to study SC position control system
	38	Phase lag compensation		
	39	Phase lead compensation		
	40	Feed back compensation		
12 th	41	Concept of state	11	Experiment to study SC position control system
	42	State variable & state model		
	43	State model for linear continuous time systems		
	44	Diagonalisation solution of state equations		
13 th	45	Concept of controllability & observability	12	Experiment to study synchros
	46	Assignment on Correlation between time and frequency response		
	47	Concept of Synchros		
	48	Working principle of synchros		
14th	2nd Minor test			
15 th	49	AC & DC techo-generators	13	Experiment to study synchros
	50	Servo motors		
	51	Magnetic amplifier		
	52	Stepper motor		

POWER SYSTEM-1 LAB (EE-204P)

Week	Practical	
	Practical Day	Topic
1 st	1	To measure the dielectric strength of transformer oil.
2 nd	2	To find string efficiency of string insulator. Without guard ring. With guard ring
3 rd	3	To measure ABCD parameters of transmission line.
4 th	4	To plot power angle characteristics of transmission line.
5 th	5	Parallel operation of two alternator.
6 th	6	To create unbalanced voltage system and to measure the sequence voltage by Segregating network.
7 th	Minor Test	
8 th	7	Viva-Voice 1 st
9 th	8	To study the characteristics of differential relay.
10 th	9	Testing and calibration of energy meter.
11 th	10	To study the characteristics of transmission line represented by : T-Network : Pie-Network

12 th	11	To plot the characteristics of IDMT static relay.
13 th	12	Testing of current transformer.
14 th	Minor Test	
15 th	13	Viva-Voice – 2 nd .

TRANSMISSION AND DISTRIBUTION (EE-204L)

Week	Theory	
	Lecture Day	Topic (Including assignment / Test)
Unit-I		
1 st	1	Importance of electric power
	2	Power system components
	3	Growth of power systems in india
	4	Power supply network
2 nd	5	Single line diagram of a typical power system
	6	Effect of voltage on conductor size
	7	Effect of increase in voltage on the transmission line efficiency
	8	Numerical on transmission efficiency
3 rd	9	Comparison of conductor vol
	10	In typical supply system elementary high voltage DC transmission
	11	DC transmission and its advantages and disadvantages
	12	Comparison between AC and DC transmission system
Unit-II		
4 th	13	Introduction to line parameter
	14	Evaluation of inductance, capacitance for single phase
	15	Evaluation of resistance for single phase
	16	Three phase symmetrical parameters
5 th	17	Three phase unsymmetrical parameters
	18	Transposed, untransposed single circuit
	19	Double circuit lines, skin and proximity effect
	20	Classification of line as short, medium and long
6 th	21	Representation and detailed performance analysis of these lines including abcd parameters
	22	Numerical on abcd parameters
	23	Detailed measurements and universal power circle diagram
	24	Numerical based on above topic
7 th	1st Minor Test	
Unit-III		
8 th	25	Various types of line conductors
	26	Line supports, poles and towers
	27	Sag calculations
	28	Effect of wind, ice and temperature
9 th	29	Stringing chart, sag template, line vibrations
	30	Introduction to insulators
	31	Types of insulator
	32	Voltage distribution, string efficiency
10 th	33	Methods of increasing string efficiency
	34	Phenomenon of corona
	35	Disruptive critical voltage, Visual critical voltage
	36	Corona loss, radio interference
Unit-IV		
11 th	37	Introduction to underground cables
	38	Classification and construction of underground cables
	39	Insulation resistance

	40	Capacitance, Capacitance determination
12 th	41	Assignment On under ground cable
	42	Power factor in cable
	43	Capacitance grading
	44	Various method of grading
13 th	45	Use of inter sheath , losses
	46	Heat dissipation and temperature rise in cable
	47	Current rating
	48	Numerical problem
14th	2nd Minor test	
15 th	49	Discussion on 2 nd minor test
	50	Comparison with overhead line
	51	Advantage and disadvantage of underground cable
	52	Various factor to be considered for selecting a cable

TRANSMISSION AND DISTRIBUTION (EE-204-L)

Week	Theory	
	Lecture Day	Topic (Including assignment / Test)
Unit-I		
1 st	1	Importance of electric power
	2	Power system components
	3	Growth of power systems in india
	4	Power supply network
2 nd	5	Single line diagram of a typical power system
	6	Effect of voltage on conductor size
	7	Effect of increase in voltage on the transmission line efficiency
	8	Numerical on transmission efficiency
3 rd	9	Comparison of conductor vol
	10	In typical supply system elementary high voltage DC transmission
	11	DC transmission and its advantages and disadvantages
	12	Comparison between AC and DC transmission system
Unit-II		
4 th	13	Introduction to line parameter
	14	Evaluation of inductance, capacitance for single phase
	15	Evaluation of resistance for single phase
	16	Three phase symmetrical parameters
5 th	17	Three phase unsymmetrical parameters
	18	Transposed, untransposed single circuit
	19	Double circuit lines, skin and proximity effect
	20	Classification of line as short, medium and long
6 th	21	Representation and detailed performance analysis of these lines including abcd parameters
	22	Numerical on abcd parameters
	23	Detailed measurements and universal power circle diagram
	24	Numerical based on above topic
7 th	1st Minor Test	
Unit-III		
8 th	25	Various types of line conductors
	26	Line supports, poles and towers
	27	Sag calculations
	28	Effect of wind, ice and temperature
9 th	29	Stringing chart, sag template, line vibrations
	30	Introduction to insulators
	31	Types of insulator
	32	Voltage distribution, string efficiency
10 th	33	Methods of increasing string efficiency
	34	Phenomenon of corona
	35	Disruptive critical voltage, Visual critical voltage
	36	Corona loss, radio interference
Unit-IV		
11 th	37	Introduction to underground cables
	38	Classification and construction of underground cables
	39	Insulation resistance

	40	Capacitance, Capacitance determination
12 th	41	Assignment On under ground cable
	42	Power factor in cable
	43	Capacitance grading
	44	Various method of grading
13 th	45	Use of inter sheath , losses
	46	Heat dissipation and temperature rise in cable
	47	Current rating
	48	Numerical problem
14th	2nd Minor test	
15 th	49	Discussion on 2 nd minor test
	50	Comparison with overhead line
	51	Advantage and disadvantage of underground cable
	52	Various factor to be considered for selecting a cable

PERSONALITY DEVELOPMENT (PSY-201-L)

Week	Theory	
	Lecture Day	Topic (Including Assignment/Test)
1 st	1	Introduction of Self
	2	Meaning and Definitions of Self
	3	Meaning and Definitions of Self-Esteem
2 nd	4	Importance of Self-Esteem
	5	Characteristics of individuals with high self-esteem
	6	Characteristics of individuals with low self-esteem
3 rd	7	Meaning and Definitions of Self- Confidence
	8	Strategies of building self-confidence
	9	Case Study
4 th	10	Problems and Solutions
	11	Meaning and Definitions of Personality
	12	Problems and Solutions
5 th	13	Factors affecting Personality
	14	Biological Factors
	15	Psychological Factors
6 th	16	Social Factors
	17	Theories of Personality
	18	Type And Trait Theories (Case Study)
7 th		----- 1st Minor Test -----
8 th	19	Freud's Theory of Personality
	20	Allport's Theory of Personality
	21	Assessment- Neo-Big Five Personality Test
9 th	22	Thematic Apperception Test (T.A.T)
	23	Word Association Test (Case Study)
	24	Play Technique (Case Study)
10 th	25	Dramatic Production Test (Case Study)
	26	Verbal Projection Test (Case Study)
	27	Problems and Solutions
11 th	28	Meaning and Definitions of Stress
	29	Causes of Stress and its impact,
	30	Strategies of stress management
12 th	31	Case study
	32	Problems and Solutions
	33	Meaning and Definitions of Emotional Intelligence
13 th	34	Concept, emotional quotient why Emotional Intelligence matters
	35	Measuring EQ
	36	Developing healthy emotions
14 th		----- 2nd Minor Test -----
15 th	37	Management of anger and interpersonal relations.
	38	Case study.
	39	Problems and Solutions