

PLANNED SYLLABUS COVERAGE(Theory)

G P Kangra		Department: <u>Electrical Engg</u> Subject <u>IEES</u>				
SYLLABUS COVERAGE		Course <u>Diploma (3rd Sem)</u> Duration <u>03 years</u>				
		Total Periods <u>56</u> Theory <u>56</u>				
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	(10) 1-10	Thermal Power Plants; Coal/Gas/Diesel & Nuclear based	Layout & working of TPP Properties of conventional fuels used in these TPP: Coal, Gas/diesel, nuclear fuels - fission & fusion reaction. Safe practices & working of: coal based, gas based, diesel based & nuclear based. Functions of major auxiliaries: Coal feed, fire tube & water tube boilers, combustion engines & type of nuclear reactors.	Power Plant Engineering - P.K. Nag, McGraw Hill, New Delhi	A course in Electrical Power - J.B. Gupta, S.K. Kataria & sons, New Delhi	
2.	(10) (11-20)	Large & Micro Hydro Power Plants	Energy conversion, classification, construction & working of various hydro power plants. Safe practices; types of Micro Hydro plants, turbines & potential locations of micro hydro power plants in Himachal.	- do -	- do -	
3.	(12) (21-32)	Solar & Biomass based power plants	Solar map of India; solar power technology: - CSP plants, construction & working (along with types) solar photovoltaic plants layout, construction & working, layout of Biogas power plant, layout of thermo-chemical based power plant; layout of Agro Chemical based power plant.	- do -	- do -	

To be approved from concerned HOD within seven days from beginning of semester & will be kept with the concerned teacher in his file.

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4.	12 (33-44)	Wind Power Plants	Wind Map of India, Wind Power density, Layout of HAWPP, Gear & Direct drive WPP, Salient features of generators, SCIG, WRIG, DFIG, WRSG, PMSG.	-do-	-do-	
5.	12 (45-56)	Economics of Power Generation & Interconnected Power System	Terms - connected load, firm power, cold & hot reserve, spinning reserve. Base & Peak load, load curve, load duration curve, integrated duration curve, Cost of Gen, Avg. Demand, Max. Demand, Demand factor, capacity factor, plant use factor, choice & size of generator units. Causes, impact and reasons of Grid system fault, sample blackouts at national & international level.			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

Approved / Not approved	
Date 01-08-2025	HOD Sign 
Date 01-08-2025	Principal Sign 

Use additional sheets (if required).

PLANNED SYLLABUS COVERAGE(Theory)

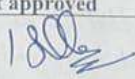
G P Kangra		Department: <u>Electrical Engg</u> Subject <u>Electrical Circuits</u>			
		Course <u>Diploma</u>	Duration <u>03 year</u>		
SYLLABUS COVERAGE		Total Periods <u>70</u>	Theory <u>70</u>		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended
1.	1-13	Single phase AC series circuit	Generation of alternating voltage, Phasor representation of sinusoidal quantities R, L, C circuit element, its voltage & current response, RL, RC, RLC combination of AC series circuit, impedance, X_c , reactance, impedance triangle, Power (quality) factor, active power, reactive power, apparent power, power triangle & vector diagram, resonance, bandwidth, quality factor, & voltage magnification in series RL, RC & RLC circuit.	Networks & Systems by Ashfaq Hussain, B.L. Theraja, Matthew No. Sadiku, & Charles K. Alexander	MATLAB Simulations
2.	14-27	Single phase A.C. parallel Circuits	RL, RC & RLC parallel combination of AC circuits, Impedance, reactance, phasor diagram, impedance triangle, RL, RC, RLC parallel AC Circuits power factor, active power, apparent power, reactive power, power triangle, Resonance in parallel RL, RC, RLC circuit, bandwidth, quality factor & voltage magnification.		

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
3.	28-44	Three phase circuit System	Phasor & complex representation of 3- ϕ supply, phase sequence & polarity, types of 3- ϕ connections, phase & line quantities in 3- ϕ star & delta system, balanced & unbalanced load, neutral shift in unbalanced load, 3- ϕ power, active, reactive & apparent in star delta system.			
4.	45-56	Network reduction & principles of circuit analysis	Source transformation, star/delta & delta/star transformation, Mesh analysis, node analysis			
5.	57-70	Network Theorems	Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem, reciprocity theorem, Duality in electric circuits.			

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PLANNED SYLLABUS COVERAGE (Theory)

G P Kangra		Department: <u>ELECTRICAL Engg</u>		Subject: <u>ELECTRICAL & Electronics Measurements</u>	
SYLLABUS COVERAGE		Course: <u>Diploma</u>		Duration: <u>3 Years</u>	
Sr. No.		Total Periods		Theory: <u>56</u>	
Period No.	Topic	Details		Instruction Reference	Additional Study Recommended
1. 10 (1-10)	Fundamentals of Measurements	Measurement: Significance, unit, fundamental quantities & standards, classification of Instrument systems. Null & deflection type instruments Absolute & secondary instruments Analog & digital instruments. Static & Dynamic characteristics, types of error. Calibration need and procedure. Classification of measuring instruments Indicating, recording & integrating instruments. Essential requirements of an indicating instruments.		Theraja B.L. Theraja A.K. Text Book of Electrical Technology vol-I (Basic Electrical Engg). G. Chand & Co. New Delhi.	Sashrey A.K. Electrical & Electronics Measurements & Instrumentation. Pharkai Rai and Sons. New Delhi
2. 10 (11-20)	Measurement of voltage & current	DC ammeter, Basic multi range, universal shunt DC voltmeter basic, Multi-range, Concept of loading effect & sensitivity AC voltmeter Rectifier		-do-	

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PLANNED SYLLABUS COVERAGE (Theory)

GPK-F-17

G P Kangra		Department: <u>Electrical Engg</u> Subject: <u>Electrical & Electronics Measurements</u>				
SYLLABUS COVERAGE		Course: <u>Diploma</u>		Duration: <u>3 Years</u>		
		Total Periods		Theory: <u>56</u>		
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
3	12 (21-32)	Measurement of electric Power.	Half wave & full wave CT & PT: Construction working & applications. clamp on meters Analog meter, Permanent magnet Moving coil & Permanent Magnet moving iron others construction, working, salient features, merits & demerits Dynamometer type wattmeter, construction & working Arrange. Multiplying factor & extension of range using CT & PT Error & compensations Active & reactive Power measurement: One, two & the three wattmeter method. Effect of Power factor on wattmeter reading in two wattmeter method maximum	Edward Hughes Electrical Technology Pearson Education New Delhi		

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Sr. No.	Period Nos.	Topic	Details	Instruction	Additional	Remarks
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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4.	8 (33-40)	Measurement of Electric Energy.	Demond indicator. Single & three phase Electronic energy meter. Constructional features & working principle. Error & their compensation. Calibration of single phase electronic energymeter using direct loading.	Rajput R.K. Electrical & Electronic Measurement & Instrumentation S. Chand & Co New Delhi		
5.	16 (41-56)	Circuit Parameter Measurement of Resistance: low resistance, kelvin double bridge, Measurement of other resistors	Measurement of resistance: low resistance, kelvin double bridge,			

Extra Topics to be covered beyond the scope of the syllabus (as required by industry/ as recommended by Teacher which he/ she finds necessary)

Sr. No.	Period No.	Topic Covered	Instruction Reference	Additional Study recommended	Remarks

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(If an additional sheet is required)

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
			Medium resistance: Voltmeter, potentiometer method. High resistance, Megger & meter. Self inductance measurement using Anderson bridge. Power diag. Measurement of capacitance using Schering bridge. Single beam/singletrace CRO. Digital storage Oscilloscope. Basic diag, working CRO electronic deflection vertical amplifier. Time base gen. Horizontal amplifier. Measurement of voltage, Amplitude, Time period. Frequency phase & angle.			

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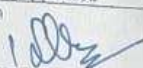
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			delay line Specification other meters, Earth tester, digital multi meter, L-C-R meter, frequency meter, Phase sequence Indicator, Power factor meter, Synchroscope, Tri-vector meter, signal generator need working & basic block diag Functional generator need working & basic diagram, functions of symmetry.			

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* 1 additional sheet (if required).

PLANNED SYLLABUS COVERAGE (Theory)

G P Kangra		Department: <u>Electrical Engg</u>		Subject: <u>Electrical Motors & Transformers</u>	
SYLLABUS COVERAGE		Course: <u>Diploma</u>		Duration: <u>3 years</u>	
Sr. No.		Total Periods		Theory: <u>65</u>	
Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1. 10 (1-10)	DC Generators	DC generator: Construction, parts, materials and their functions. Principle of operating DC generator. Fleming's right hand rule. Schematic diagrams. e.m.f. eqn. of generator. armature reaction. Commutation and applications of DC generators.	G.C. Gang P.S. Bunbhis Electrical M/C vol-1, II Khanra	Bhattacharya S.K. Electrical Machines, MC Graw Hill Education New Delhi	
2. 12 (11-22)	DC Motors	DC motor. Types of DC motors. Fleming's Left hand rule. Principle of operation. Back e.m.f. & its significance. Voltage eqn of DC motor. Torque & speed. Armature torque. Shaft torque. B.H.P. Brake test, losses. efficiency. DC motor starters. Necessity, two point & three point starters. Speed control of DC shunt & series	Theraja B.L. Electrical Technology vol-II C.A.C & DC M/C S. Chand -do- -do-		

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PLANNED SYLLABUS COVERAGE(Theory)

GPK-F-17

ANNOUNCED SYLLABUS COVERAGE (Theory)

G P Kangra

Department: Electrical Engg Subject: EM & T

Course: Diploma Duration: 3 Years

SYLLABUS COVERAGE Total Periods: _____ Theory: 65

No. Period Nos. Topic Details Instruction Reference Additional Study Recommended Remarks

3.	12	Single phase Transformer (23-34)	motor, Flux & Armature control, Brushless DC motor, Construction & working Types of transformer Shell type & core type Construction, Parts & functions, materials used for different parts, CRGO, CRNGO, HRGO, amorphous cores, Transformer, Principle of operation, EMF eqn of transformer, Derivation, Voltage transformation ratio, Significance of transformer ratings, Transformer No-load & on-load phasor diagram, Leakage reactance, Equivalent circuit of transformer, Equivalent resistance & reactance.	-do-	-do-	
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PLANNED SYLLABUS COVERAGE(Theory)

GPR-F-17

G P

Kangra

SYLLABUS
COVERAGE

Department: Electrical Engg Subject: EM&T

Course: Diploma Duration: 3 Years

Total Periods: _____ Theory: 65

Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4.	20 (35-54)	Three Phase Transformer	voltage regulation & Efficiency, Direct loading, OC/SC method. All day efficiency. Bank of three single phase T/F, single unit of three phase T/F Distribution & power T/F, construction, cooling, Three phase T/F connection as per IS. 2026. (part-IV)-1977, three phase two phase conversion (Scott connection. Selection of T/F as per IS 10028 (part-I)-1985. Criteria for selection of distribution T/F & power T/F. Amorphous core type Distribution T/F Specifications of three phase.	-do-	-do-	

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PLANNED SYLLABUS COVERAGE(Theory)

GPK-F-17

G P		Department: <u>Electrical Engg</u> Subject: <u>EM + T</u>			
Kangra		Course: <u>Diploma</u>		Duration: <u>3 years</u>	
SYLLABUS COVERAGE		Total Periods: _____		Theory: <u>65</u>	
No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended
5	11 (55-65)	Special Purpose Transformer	distribution T/F as per IS: 1150 (part I) 1989. Need of 11el operation of three phase. Conditions for parallel operation polarity test on mutually inductive coils & single phase T/F. Polarity test. Phasing out test on three phase T/F. Single phase & three phase auto T/F. Construction, working & applications. Instrument T/F. Construction working & applications of CT & PT. Isolation Transformer. Contact onal features & applications. Single phase welding T/F.	-do-	-do-

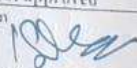
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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
			Constructional features and applications. Pulse T/F. Constructional features & applications. K ² factor of transformer. Overheating due to non-linear loads & harmonics.			

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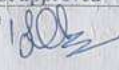
G P Kangra		Department: <u>EE</u>	Subject: <u>ED&C</u>			
		Course: <u>Diploma</u>	Duration: <u>3 years</u>			
SYLLABUS COVERAGE		Total Periods: <u>56</u>	Theory: <u>56</u>			
Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
1.	1-11	Chapter 1: SemiConductor And Diodes	Definition, Extrinsic/Intrinsic N-type & P type. PN Junction Diode - F.B & R. B characteristics. Zener diode - Principle, characteristics, Construction & Working. Diode Rectifiers - Half & Full wave. Filters - C, L, LC & PI filters.	Electronic Devices & Circuits By	Use By Internet	
2.	12-24	Chapter 2 Bipolar Junction Transistor	NPN & PNP Transistor - operation & characteristics. Common Base, Common Emitter, Common Collector Configuration - characteristics & Working. High frequency model of BJT. Classification of Amplifiers, Negative feedback	S.K. Sahdev Analog Circuits By A.K. Maini		
3.	25-36	Chapter 3 Field Effect Transistor	FET working, Principle, Classification. MOSFET Small signal mode (N-channel) P-channel MOSFET - characteristics Enhancement & Depletion mode MOSFET as switch. Common source Amplifier, UJT equivalent ckt & operation	Khanna Publishers		

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Sr. No.	Period Nos.	Topic	Details	Instruction Reference	Additional Study Recommended	Remarks
4.	37-48	Chapter-4 SCR, DIAC, TRIAC	Construction, Working, operation, Characteristics of DIAC, TRIAC, SCR. SCR & MOSFET as a switch, DIAC as a Bidirectional switch Comparison of SCR, DIAC, TRIAC, MOSFET.			
5.	49-56	Chapter-5 Amplifiers And Oscillators	Feedback Amplifiers - Properties of negative feedback, Impact of feedback Basic Feedback Amp ^r topologies Voltage series, & shunt, Current series & shunt. Oscillator - Crystal, Non-linear / Pulse Oscillator			

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