

Preparatory Course (Online) in Electrical Engineering for DyE / AEE / AE/ JE posts and MSEB/DISCOM/GENCO/TRANSCO/SSC/CGL/MPSC/Technical, RRB, METRO, GATE/IES, Campus and off-campus selection.

<https://tinyurl.com/DISCOM-MSEDCL-REGISTER>

Course Overview

This course is designed to help both graduate electrical engineers and employed professionals preparing for entry level, promotion exams for AEE, DyE, AE, and JE posts. We specialize in competitive and university exams covering a range of key exams including MSEB/DISCOM/GENCO/TRANSCO, SSC/CGL, MPSC/Technical, RRB, Metro, GATE, IES and campus interviews.

This course goes beyond traditional theoretical teaching. We focus on building a solid foundation of core concepts, equipping you with the skills needed for fieldwork, boosting your confidence for technical exams and campus interviews, and teaching you optimized strategies for tackling objective questions. You'll develop critical thinking, problem-solving abilities, and time management skills—preparing you for professional success. Our program is designed to transform how you approach engineering education, making it easy, engaging, practical, and impactful.

Objectives

- To simplify complex concepts, making engineering education both enjoyable and easy to grasp.
- To foster both the professional and personal growth of engineering students.
- Question and answer-based approach with minimum theory.
- Test series focused on individual topics and subjects to strengthen your understanding.
- Access to previous years' question papers of examinations held by MSEB for targeted practice.
- Facilitating detailed discussions to clarify concepts and enhance problem-solving abilities,
- Maximizing your score through time-bound MCQ practice,
- Reducing negative marking by improving accuracy and exam strategy

Faculty

Sachin S. Wagh, holds an engineering postgraduate degree from Government College of Engineering, specializing in Electrical Power Systems. With over 24 years of experience as both a researcher and educator, Sachin has served as an Assistant Professor at K. K. Wagh Institute of Engg Education and Research (Pune Univ), Nashik, for 12 years and has been a visiting professor to multiple engineering institutes. Recognized as a Post-Graduate Teacher (Power Systems) by Savitribai Phule Pune University (2011-2016), he is now self-employed in training, consulting, research and project development in electrical engineering, specializing in application software such as MATLAB, PSCAD, ETAP, PowerWorld Simulator, and DlgSILENT.

Course Details

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| • Commencement: Dec 2025 | Duration: 60 days (150 Hours) |
| • Mode: Live online sessions (Non recorded) | Batch Size: Limited to 20 students |
| • Fees: Rs. 8000/- (inclusive of registration charges) | Time: 08:00 – 10:00 p.m. |
| • Online Test Series and Assignments (2000 Important Questions). | |

Why Choose Us?

- Personalized guidance to enhance learning and well experienced.
- Comprehensive course materials and tests (about 1000 objective questions)
- Focus on real-world applications, not just theoretical knowledge
- Limited seats to ensure individual attention
- 13 years of experience in coaching for MSEB examinations.

Hurry! Limited seats available! Simple Google Form: <https://tinyurl.com/DISCOM-MSEDCL-REGISTER>

Don't forget to share this email with your friends and fellow engineering candidates!

**For more details, queries and registration, please contact: Sachin S. Wagh (ME Electrical Power System)
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SYLLABUS*

Basic Electrical Engineering and Network Analysis

Basics of Physics, Atomic structure, Electrical engineering terms (definition, units, laws, and factors affecting), Series and parallel circuits, Filament lamps, Colour coding, Electrical mechanical and thermal system and equivalence, Electromagnetism (terms, definitions, units, relationships, laws, materials), Electromagnetic induction, Series and parallel circuits, Electrostatics, important terms, formulae, relationship and units, Capacitors, types, applications, series and parallel calculations. Insulating, conducting and dielectric materials, Class of insulation, Dielectric loss and Tan δ .

AC circuits, Principle, Terms related to waveform, Average rms peak value and inter relationship for different waveforms, Analytical and graphical method, Common factors, Phasor diagrams, R, L, C, R-L-C series and parallel circuits, Power factor, Apparent, active and reactive power calculations, Energy stored, Energy balance theory, Three-phase circuits, Star and delta circuits, phase shift, Conversions, Three-phase power, Balanced and unbalanced system.

Terms used in network, Types of network and sources, S.C. and O.C., Source transformation and shifting, KCL, Super-node, Nodal analysis, KVL, Super-mesh, Loop analysis, Superposition, Thevenin's, Norton's, Maximum power transfer, Reciprocity, Millman's, Substitution, Tellegen's theorem, Application, comparison, and selection of appropriate theorem for given network conditions for smart solutions. Resonance, Series, Parallel resonance, Conditions, Bandwidth, selectivity and quality factor. Two port network, Z, Y, ABCD, h parameters, Interrelationships, and their equivalent network, Conditions of symmetry and reciprocity, Transfer function, Time Constant, Magnetically coupled circuits, Graph theory, Basics of Laplace transform, Basic signals and functions, Initial and final value theorem, Steady state and Transient circuit analysis.

Electrical Power System

Sources of energy, generation and comparison along with statistics, Power Sector in India (past, present and future), Regional grids, Types of load and characteristics, Load and load duration curve, Contract and Maximum demand, Tariff, Types, and importance of power and load factor, Energy calculations, Load, Capacity, Diversity, Demand, Capacity and Utilization factor, Economics of power generation, Incremental cost and criterion, Economic load scheduling and sharing, Loss coefficients, Penalty factor, Spinning, Hot and cold reserve. Typical Generation, Transmission and Distribution power system with voltage levels. Classification of Transmission and Distribution systems in India. Feeder, Distributor, Service mains, Types of distribution system, AC/DC, Concentrated/uniformly distributed, Supplied from one/both ends, Radial, and Ring main system. IE rules, Electricity Act 2003 and ECBC 2017 code.

Cables, classification, construction and applications. Insulation resistance and factors affecting it. Capacitance calculations, charging current, and reactive power calculations for single and three core cable. Measurement of conductor to conductor and sheath capacitance. Dielectric stress, economic sizing and grading methods. Fault location (Murray loop, Varley loop, Blavier and Fisher test).

Insulators, types, materials, comparison, use and calculation of number of insulators required. Voltage distribution, K factor, String efficiency, Crossarm, Capacitance grading, and Static shielding.

Conductor, Types (practical), Loading, Galloping, Stockbridge damper, Stranded conductors, Supporting towers, structure, types and voltage levels. Sag, Tension calculations for equal and unequal ground level, factors affecting, stringing chart, standard spacing and ground clearance calculations and standard values.

Concept of GMR and GMD and its use for Inductance and Capacitance calculation for different line configurations, Transposition and Kelvin's method of images. Kelvins and modified Kelvin's law for most economic sizing.

Short, Medium and Long transmission lines, ABCD parameters, Nominal and Equivalent Tee and Pi models, Lumped and distributed networks, Voltage regulation and allied loading conditions, Transmission efficiency, Characteristic impedance, SIL, Propagation and travelling waves, Coefficients of reflection and refraction, Power handling capacity, Skin, Ferranti and Proximity effect.

Complex power, Voltage control/Reactive power compensation, Methods, PF improvement and required capacity (capacitor bank) calculations, Corona loss, symptoms, effects, factors affecting, disadvantages, advantages, Peek's formulae and corona loss reduction, and Radio Interference.

Per Unit system, advantages, base selection, rules and calculations, Impedance diagram, Impedance (Z_{bus}) matrix and calculations. Faults, types and analysis. R-L series circuit transient, sub-transient, transient and steady state, Thevenin's theorem and symmetrical fault analysis, DC offset, CB selection, Current limiting reactors, Symmetrical components, Sequence impedances for common power system components, Power Invariance, Unsymmetrical fault analysis.

Types of buses, Load flow equations, Admittance matrix (Y_{bus}) properties and formulation, Sparsity, Jacobian matrix, Methods and comparison. Power system stability and its types, Dynamics of a synchronous machine, Inertia constant, Swing, Power angle equation, Equal area criterion, X/R ratio and its importance, and Methods to improve stability.

Common terms used in switchgear and protection, Classification of relays, Universal torque characteristic equation, Directional and non-directional characteristics, Instantaneous, IDMT, Overcurrent, Overvoltage, Distance, Reactance, Impedance, Mho and offset-mho, Negative sequence, Earth fault, and Numeric relay. Sensitivity of a relay. Characteristics of a good protection system, protection zones, overlap, underreach and overreach. Differential protection, Types, CT connections, Transformer, Alternator, Feeder and three step distance protection. Relay, Circuit Breaker (CB), and total operating time, Transient switching, Doubling effect, Significance of switching instant, Single pole switching, Arc interruption, Making, Breaking, and Prospective current, Transient recovery, recovery and restriking voltage, Reignition and restrike, First pole to clear factor, Current chopping, Resistance switching, CB ratings, Dielectric strength and materials, Rated breaking and making current, Rated operating sequence, Air break, Blast, MO, Vacuum and SF₆ CB, Time Current Curve (TCC), Pick up current, Plug setting and Time multiplier setting. Fuse, types, characteristic, fusing current, material and HRC fuse.

Other Important Subjects

Electrical Machines (Major): D.C. Machines, Transformers, Induction Motors, Alternator, Synchronous Motor, Special Purpose Motors.

Electrical Measurements & Instrumentation

Control Systems

Analog and Digital Electronics

Power Electronics

Reasoning

Analytical Reasoning, Directions, Similarities and Differences, Number Series, Blood Relationships, Arrangements, Analogies, Classification, Coding-Decoding, Symbols and Notations, Alphabet Series, Non-Verbal Reasoning, Symmetry, Data Sufficiency, Syllogisms, Statements, Visual Ability etc.

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Quantitative aptitude

Number Systems, Ratio and Proportion, Average, Percentages, Square Roots, Races and Games, Problems on Trains, Cube Roots, H.C.F. and L.C.M., Simplification, Pipes and Cisterns, Time and Distance, Problems on Ages, Boats and Streams, Clocks and Calendars, Time and Work, Data Interpretation, Mixture and Allegation, Simple & Compound Interest, Profit and Loss, Partnership, Discounts etc.

Marathi language

Vocabulary, Grammar, Parts of Speech, Translation of Sentences, Usage of Words, Idioms and Phrases, Indirect and Direct Speech, Precise Writing, Cloze test, Comprehension, Fill in the blanks etc.

Exam Structure (Online)

SN	Test Structure	No. of Que.	Marks	Time
1	<i>Test of Professional Knowledge</i>	50	110	
2	<i>Test of General Aptitude</i>			
	Test of Reasoning	40	20	
	Test of Quantitative Aptitude	20	10	
	<i>Test of Marathi Language</i>	20	10	
	25% Negative Marking Expected for Wrong Answer (Depends on no. of options 4/5)	130	150	Composite time of 120 minutes

*Note: Syllabus given is not published officially by an employer or any organizing body. It is designed based on pattern of previous examinations, feedback, and experience.

Thank you.

Hurry! Limited seats available (20 only).

Secure your spot now!

<https://tinyurl.com/DISCOM-MSEDCL-REGISTER>

<https://sites.google.com/view/msedcl-syllabus-dye-aee-class>