






**ACE**  
Engineering Academy  
(Leading Institute for ESE/GATE/PSUs)

# ESE - 2019 PRELIMS

## Online Test Series

## ELECTRICAL ENGINEERING (EE)

**No. of Tests : 44 + Free 30 Practice Tests of ESE - 2018 Online Test Series**

	ESE- 19 Test Series	Practice Tests ESE - 18 Test Series
 Subject Wise Grand Tests	22	22
 Multi Subject Grand Tests	10	-
 Full Length Mock Tests	12	8

All tests will be available till ESE -2019 (Prelims) Examination.

### TEST SERIES HIGHLIGHTS

- ★ All India Rank will be given for each test.
- ★ Test wise and overall statistics.
- ★ Comparison with toppers.
- ★ Question wise and test wise time analysis & comparison with toppers on time management.

## Subject-wise Tests

**Tests will be activated at 06:00 pm on scheduled day**

Test No	Subject Name	No. of Questions	Max Marks	Duration	Date of Activation
EE-01	Control Systems	50	100	60 Min	15-05-2018
EE-02	Systems and Signal Processing	50	100	60 Min	
EE-03	Analog and Digital Electronics	50	100	60 Min	21-05-2018
EE-04	Engineering Mathematics and Numerical Analysis	33	66	40 Min	
EE-05	Electric Circuits and Fields	50	100	60 Min	28-05-2018
EE-06	Basics of Energy and Environment	33	66	40 Min	
EE-07	Basic Electronics Engineering	50	100	60 Min	04-06-2018
EE-08	General Principles of Design, Drawing, Importance of Safety	33	66	40 Min	
EE-09	Electrical Machines	50	100	60 Min	11-06-2018
EE-10	Ethics and values in Engineering profession	33	66	40 Min	
EE-11	Engineering Mathematics	50	100	60 Min	18-06-2018
EE-12	Information and Communication Technologies (ICT)	33	66	40 Min	
EE-13	Power Systems	50	100	60 Min	25-06-2018
EE-14	Engineering Aptitude covering Logical reasoning and Analytical ability	33	66	40 Min	
EE-15	Electrical Materials	50	100	60 Min	02-07-2018
EE-16	Basics of Material Science and Engineering	33	66	40 Min	
EE-17	Electrical and Electronic Measurements	50	100	60 Min	09-07-2018
EE-18	Standards and Quality practices in production, construction, maintenance and services	33	66	40 Min	
EE-19	Computer Fundamentals	50	100	60 Min	16-07-2018
EE-20	Basics of Project Management	33	66	40 Min	
EE-21	Power Electronics and Drives	50	100	60 Min	23-07-2018
EE-22	Current Issues of National and International importance related to social, Economic and Industrial Development	33	66	40 Min	

## Full Length Mock Tests -1<sup>st</sup> Series

Test No	Mock codes	No. of Questions	Max Marks	Duration	Date of Activation
EE-23	Mock-1 PAPER-1	100	200	2 Hours	05-08-2018
EE-24	Mock-1 PAPER-2	150	300	3 Hours	
EE-25	Mock-2 PAPER-1	100	200	2 Hours	12-08-2018
EE-26	Mock-2 PAPER-2	150	300	3 Hours	

## Multi Subject Grand Tests

Test No	Subjects codes	No. of Questions	Max Marks	Duration	Date of Activation
EE-27	Electric Circuits and Fields + Control Systems	50	100	60 Min	20-08-2018
EE-28	Basics of Energy and Environment + Engineering Aptitude covering Logical reasoning and Analytical ability	33	66	40 Min	
EE-29	Systems and Signal Processing + Electrical and Electronic Measurements	50	100	60 Min	27-08-2018
EE-30	Engineering Mathematics and Numerical Analysis + Current Issues of National and International importance related to social, Economic and Industrial Development	33	66	40 Min	
EE-31	Analog and Digital Electronics + Electrical Materials + Basic Electronics Engineering	50	100	60 Min	03-09-2018
EE-32	Basics of Project Management + Basics of Material Science and Engineering	33	66	40 Min	
EE-33	Computer Fundamentals + Electrical Machines	50	100	60 Min	10-09-2018
EE-34	Information and Communication Technologies (ICT) + General Principles of Design, Drawing, Importance of Safety	33	66	40 Min	
EE-35	Engineering Mathematics + Power Systems + Power Electronics and Drives	50	100	60 Min	17-09-2018
EE-36	Ethics and values in Engineering profession + Standards and Quality practices in production, construction, maintenance and services	33	66	40 Min	

## Full Length Mock Tests -2<sup>nd</sup> Series

Test No	Mock codes	No. of Questions	Max Marks	Duration	Date of Activation
EE-37	Mock-3 PAPER-1	100	200	2 Hours	30-09-2018
EE38	Mock-3 PAPER-2	150	300	3 Hours	
EE-39	Mock-4 PAPER-1	100	200	2 Hours	14-10-2018
EE-40	Mock-4 PAPER-2	150	300	3 Hours	
EE-41	Mock-5 PAPER-1	100	200	2 Hours	18-12-2018
EE-42	Mock-5 PAPER-2	150	300	3 Hours	
EE-43	Mock-6 PAPER-1	100	200	2 Hours	25-12-2018
EE-44	Mock-6 PAPER-2	150	300	3 Hours	

NOTE: The Dates of above MOCK Tests may Change according to the ESE – 2019(Prelims) Exam schedule.

## Free Practice Tests of ESE (Prelims)-2018 Online Test Series

### Subject-wise Tests

Test No	Subject Name	No. of Questions	Max Marks	Duration	Date of Activation
EE-P1	Electric Circuits and Fields	50	100	60 Min	15-05-2018
EE-P2	Control Systems	50	100	60 Min	
EE-P3	Systems and Signal Processing	50	100	60 Min	
EE-P4	Analog and Digital Electronics	50	100	60 Min	
EE-P5	Engineering Mathematics	50	100	60 Min	
EE-P6	Basic Electronics Engineering	50	100	60 Min	
EE-P7	Electrical and Electronic Measurements	50	100	60 Min	
EE-P8	Computer Fundamentals	50	100	60 Min	
EE-P9	Electrical Machines	50	100	60 Min	
EE-P10	Electrical Materials	50	100	60 Min	
EE-P11	Power Systems	50	100	60 Min	
EE-P12	Power Electronics and Drives	50	100	60 Min	
EE-P13	Basics of Energy and Environment	33	66	40 Min	30-05-2018
EE-P14	Standards and Quality practices in production, construction, maintenance and services	33	66	40 Min	
EE-P15	Basics of Project Management	33	66	40 Min	
EE-P16	Information and Communication Technologies (ICT)	33	66	40 Min	
EE-P17	Ethics and values in Engineering profession	33	66	40 Min	
EE-P18	Engineering Aptitude covering Logical reasoning and Analytical ability	33	66	40 Min	
EE-P19	Basics of Material Science and Engineering	33	66	40 Min	
EE-P20	General Principles of Design, Drawing, Importance of Safety	33	66	40 Min	
EE-P21	Engineering Mathematics and Numerical Analysis	33	66	40 Min	
EE-P22	Current Issues of National and International importance related to social, Economic and Industrial Development	33	66	40 Min	

## Free Practice Tests of ESE (Prelims)-2018 Online Test Series

### Full Length Mock Tests

Test No	Mock codes	No. of Questions	Max Marks	Duration	Date of Activation
EE-P23	Mock-1 PAPER-1	100	200	2 Hours	05-07-2018
EE-P24	Mock-1 PAPER-2	150	300	3 Hours	
EE-P25	Mock-2 PAPER-1	100	200	2 Hours	
EE-P26	Mock-2 PAPER-2	150	300	3 Hours	
EE-P27	Mock-3 PAPER-1	100	200	2 Hours	
EE-P28	Mock-3 PAPER-2	150	300	3 Hours	
EE-P29	Mock-4 PAPER-1	100	200	2 Hours	
EE-P30	Mock-4 PAPER-2	150	300	3 Hours	

## Syllabus for ESE (Prelims), Paper-2

Subject Name	Syllabus
<b>Engineering Mathematics</b>	Matrix theory, Eigen values & Eigen vectors, system of linear equations, Numerical methods for solution of non-linear algebraic equations and differential equations, integral calculus, partial derivatives, maxima and minima, Line, Surface and Volume Integrals. Fourier series, linear, nonlinear and partial differential equations, initial and boundary value problems, complex variables, Taylor's and Laurent's series, residue theorem, probability and statistics fundamentals, Sampling theorem, random variables, Normal and Poisson distributions, correlation and regression analysis.
<b>Electrical Materials</b>	Electrical Engineering Materials, crystal structures and defects, ceramic materials, insulating materials, magnetic materials – basics, properties and applications; ferrites, ferro-magnetic materials and components; basics of solid state physics, conductors; Photo-conductivity; Basics of Nano materials and Superconductors.
<b>Electric Circuits and Fields</b>	Circuit elements, network graph, KCL, KVL, Node and Mesh analysis, ideal current and voltage sources, Thevenin's, Norton's, Superposition and Maximum Power Transfer theorems, transient response of DC and AC networks, Sinusoidal steady state analysis, basic filter concepts, two-port networks, three phase circuits, Magnetically coupled circuits, Gauss Theorem, electric field and potential due to point, line, plane and spherical charge distributions, Ampere's and Biot-Savart's laws; inductance, dielectrics, capacitance; Maxwell's equations.
<b>Electrical and Electronic Measurements</b>	Principles of measurement, accuracy, precision and standards; Bridges and potentiometers; moving coil, moving iron, dynamometer and induction type instruments, measurement of voltage, current, power, energy and power factor, instrument transformers, digital voltmeters and multi-meters, phase, time and frequency measurement, Q-meters, oscilloscopes, potentiometric recorders, error analysis, Basics of sensors, Transducers, basics of data acquisition systems
<b>Computer Fundamentals</b>	Number systems, Boolean algebra, arithmetic functions, Basic Architecture, Central Processing Unit, I/O and Memory Organization; peripheral devices, data representation and programming, basics of Operating system and networking, virtual memory, file systems; Elements of programming languages, typical examples.
<b>Basic Electronics Engineering</b>	Basics of Semiconductor diodes and transistors and characteristics, Junction and field effect transistors (BJT, FET and MOSFETS), different types of transistor amplifiers, equivalent circuits and frequency response; oscillators and other circuits, feedback amplifiers.
<b>Analog and Digital Electronics</b>	Operational amplifiers – characteristics and applications, combinational and sequential logic circuits, multiplexers, multi-vibrators, sample and hold circuits, A/D and D/A converters, basics of filter circuits and applications, simple active filters; Microprocessor basics-interfaces and applications, basics of linear integrated circuits; Analog communication basics, Modulation and demodulation, noise and bandwidth, transmitters and receivers, signal to noise ratio, digital communication basics, sampling, quantizing, coding, frequency and time domain multiplexing, power line carrier communication systems.



Subject Name	Syllabus
<b>Systems and Signal Processing</b>	Representation of continuous and discrete-time signals, shifting and scaling operations, linear, time-invariant and causal systems, Fourier series representation of continuous periodic signals, sampling theorem, Fourier and Laplace transforms, Z transforms, Discrete Fourier transform, FFT, linear convolution, discrete cosine transform, FIR filter, IIR filter, bilinear transformation.
<b>Control Systems</b>	Principles of feedback, transfer function, block diagrams and signal flow graphs, steady-state errors, transforms and their applications; Routh-hurwitz criterion, Nyquist techniques, Bode plots, root loci, lag, lead and lead-lag compensation, stability analysis, transient and frequency response analysis, state space model, state transition matrix, controllability and observability, linear state variable feedback, PID and industrial controllers.
<b>Electrical Machines</b>	Single phase transformers, three phase transformers - connections, parallel operation, auto-transformer, energy conversion principles, DC machines - types, windings, generator characteristics, armature reaction and commutation, starting and speed control of motors, Induction motors - principles, types, performance characteristics, starting and speed control, Synchronous machines - performance, regulation, parallel operation of generators, motor starting, characteristics and applications, servo and stepper motors.
<b>Power Systems</b>	Basic power generation concepts, steam, gas and water turbines, transmission line models and performance, cable performance, insulation, corona and radio interference, power factor correction, symmetrical components, fault analysis, principles of protection systems, basics of solid state relays and digital protection; Circuit breakers, Radial and ring-main distribution systems, Matrix representation of power systems, load flow analysis, voltage control and economic operation, System stability concepts, Swing curves and equal area criterion. HVDC transmission and FACTS concepts, Concepts of power system dynamics, distributed generation, solar and wind power, smart grid concepts, environmental implications, fundamentals of power economics.
<b>Power Electronics and Drives</b>	Semiconductor power diodes, transistors, thyristors, triacs, GTOs, MOSFETs and IGBTs - static characteristics and principles of operation, triggering circuits, phase control rectifiers, bridge converters - fully controlled and half controlled, principles of choppers and inverters, basis concepts of adjustable speed dc and ac drives, DC-DC switched mode converters, DC-AC switched mode converters, resonant converters, high frequency inductors and transformers, power supplies.