



Online/Offline

# ESE 2023 MAINS TEST SERIES

Total **15** Tests

9 Subject-wise Tests + 6 Full Syllabus Tests



Commencing from **9<sup>th</sup> April, 2023**

### Features:

- Dynamic test series on every Sunday having test of 3 hours exactly on the UPSC pattern and environment.
- Test Series contains Repeat Topics and New Topics to maintain continuity in study.
- Facility to cross check the evaluated answer sheets and access to answer sheets of top scorer of every test to compare your performance.
- Tests series is available in online and offline both modes.

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## Important Note

ESE-2023 Mains Test Series	
Test will be conducted on	Every Sunday as per schedule
Test solutions will be uploaded on www.madeeasy.in	Every Tuesday at 10:00 am
Test results will be updated on on www.madeeasy.in	Every Saturday at 7:00 pm
Online test series students can see their evaluated answer sheets at test series portal	Offline test series students can see their evaluated answers sheets at Delhi centre on Every Saturday   12:00 pm to 6:00 pm Venue : At respective centre

## Test Pattern

<b>9</b> Subjectwise Tests	+	<b>6</b> Full Syllabus Tests	=	<b>15</b> Total Tests
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## Fee Structure

ESE 2023 Mains Test Series (Online/Offline)	₹ 5,000 + GST
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## Test Venue

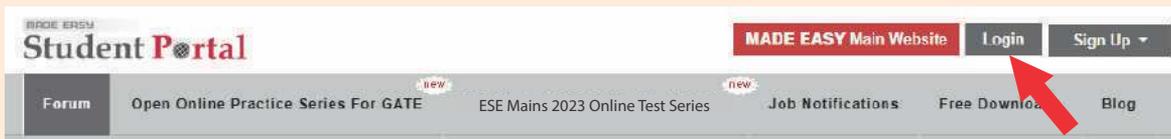
DELHI CENTRE :		
<b>CE, ME, EE, E&amp;T</b>	<b>Mains Batches</b>	<b>MADE EASY IGNOU Road Centre:</b> Hundred Million, 6, Dang Complex, Saidulajab Extension, IGNOU Road, Near Saket Metro Station, New Delhi - 110030; <b>Ph:</b> 011-40573823, 9599022014
	<b>External Students</b>	<b>Saket Centre - I :</b> Opp. ITDC, Westend Marg, Near Saket Metro Station, Saidulajab, New Delhi - 30; <b>Ph:</b> 088511 76827
<b>OTHER CENTRES :</b>		
Test series is also available at other MADE EASY Centres viz. Hyderabad, Bhopal, Jaipur, Kolkata, Bhubaneswar, Pune		

### Tests for Absentees :

Students are advised not to remain absent for the tests. If you miss the tests due to any unavoidable circumstances, then you can appear the test on the **next day**, as per given schedule at the respective centre.

## STEPS FOR ESE MAINS ONLINE TEST SERIES

- Visit: [www.studentportal.madeeasy.in](http://www.studentportal.madeeasy.in)
- Log-in into the portal, using the credentials sent to you.



- Click on the **ESE Mains 2023 Online Test Series** tab.



- Click on the **VIEW DETAILS** tab of your respective stream

### **ESE 2023**

#### **Mains Test Series**

#### **ELECTRONICS & TELECOM ENGG.**

Commencing from 9<sup>th</sup> April, 2023

No. of Tests : 15
Start Date : 9 <sup>th</sup> April, 2023 : 1:00 PM
End Date : 14 <sup>th</sup> June, 2023 : 11:59 PM
Price : ₹ 5,000 + GST

[View Details](#)

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**Scroll down for detailed schedule**

- Click on **Go to test** button to download the question paper & QCAB (Question cum answer booklet) to write the test.

TEST-1
<b>Paid Test</b>
No. of Questions : 8
Max Marks : 300
Scheduled On : 9 <sup>th</sup> April, 2023, 1:00 PM
Submission Deadline : 10 <sup>th</sup> April, 2023
<a href="#">Go To Test</a>

1. ME_Thermodymaic + RAC(Conv)_Q.pdf	 <a href="#">Download</a>
1. ME_Thermodymaic + RAC(Conv)_QCAB.pdf	 <a href="#">Download</a>

- Write your Answers in QCAB or A4 size papers
- Scan the QCAB/ A4 size papers and combine it into a single PDF format. Make sure your PDF file is less than 100 MB.
- Click on **Upload Answer Sheet** button to upload the QCAB/A4 size papers against every question paper.



1. Please ensure to upload the scanned answer sheets within the submission deadline, else you will not be able to upload it on the Portal.
2. Please ensure to mention the question number and its sub-parts clearly on the left hand side of the page in the answer sheets. Also, mention your details like **NAME, ROLL NUMBER, TEST NUMBER** and **SUBJECT NAME** on the front page of the answer sheets.
3. After the evaluation, your evaluated answer sheets will be uploaded into your profile.

For any query, please feel free to email us at [infodelhi@madeeasy.in](mailto:infodelhi@madeeasy.in)



**Scroll down for detailed schedule**



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# ESE 2023

## Mains Test Series

**Civil Engineering**

**9**  
Subjectwise Tests

**6**  
Full Syllabus Tests

**15**  
Total Tests

Test No.	Date/Day	Max. Marks	Subject	
1.	9 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Strength of Materials (All Topics)
			Section B : New Topic	Environmental Engineering (All Topics)
2.	16 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Highway Engineering + Surveying and Geology (All Topics)
			Section B : Repeat Topic of Test 1	Strength of Materials - 1 + Environmental Engineering -1 (Part Syllabus) Properties of Materials, Simple Stress-strain and elastic constants, Plain Stress-strain, Mohr circle of stress & strain, Bending stress, SFD & BMD + Water supply Engineering, Air, Noise pollution and ecology
3.	23 <sup>rd</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Geo-technical & Foundation Engineering (All Topics)
			Section B : Repeat Topic of Test 2 + Repeat Topic of Test 1	Highway Engineering - 1 + Surveying and Geology-1 (Part Syllabus) Strength of Materials - 2 + Environmental Engineering - 2 (Part Syllabus) Topics: Planning & construction methodology, Alignment and geometric design + Classification of surveys, various methodologies, instruments and analysis of measurement of distances, elevation and directions + Torsion, Principle stress, theories of failure & shear stress+ Waste water engg, soild waste management
4.	30 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Design of concrete and Masonry Structures (All Topics)
			Section B : Repeat Topic of Test 3 + Repeat Topic of Test 2	Geo-technical & Foundation Engineering - 1 (Part Syllabus) Highway Engineering - 2 + Surveying and Geology-2 (Part Syllabus) Properties of soil, classification, various tests and inter-relationships; permeability and seepage, compressibility, consolidation and shearing resistance, earth pressure theories and stress distribution in soil+ Traffic Surveys and Controls; Principles of Flexible and Rigid pavements design + Field astronomy, Global Positioning systems; Map preparation; Photogrammetry; Remote sensing concepts; Survey Layout for culverts, canals, bridges, road/railway alignmet and buildings, setting out of curves; Basic knowledge of Engineering geology and its application in projects.
5.	7 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Flow of fluids, hydraulic machines and hydro power (All Topics)
			Section B : Repeat Topic of Test 4 + Repeat Topic of Test 3	Design of concrete and Masonry Structures - 1 (Part Syllabus) Geo-technical & Foundation Engineering - 2 (Part Syllabus) Limit state design for bending, shear, axial compression & combined forces; design of beams, Lintels, Tanks & staircases + Soil exploration - planning and methods, properties and uses of geo-synthetics, types of foundations and selection criteria, bearing capacity, settlement analysis, design and testing of shallow and deep foundations; slope stability analysis, earthen embankments, dams and earth retaining structure : types, analysis and design, Principles of ground modifications.
6.	14 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Structural Analysis + CPM PERT (All Topics)
			Section B : Repeat Topic of Test 5 + Repeat Topic of Test 4	Flow of fluids, hydraulic machines and hydro power - 1 (Part Syllabus) Design of concrete and Masonry Structures - 2 (Part Syllabus) Fluid properties; Dimensional Analysis and Modeling; Fluid dynamics including flow kinematics and measurements; Flow net; Viscosity, Boundary layer and control, Drag, Lift, Pipe networks + Design of slabs, foundations and retaining walls; Principles of pre-stressed concrete design including materials and methods; Earthquake resistant design of structures, design of Masonry structure
7.	21 <sup>st</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Design of Steel Structure + Hydrology (All Topics)
			Section B : Repeat Topic of Test 6 + Repeat Topic of Test 5	Structural Analysis - 1 + CPM PERT - 1 (Part Syllabus) Flow of fluids, hydraulic machines and hydro power - 2 (Part Syllabus) Analysis of determinate and indeterminate structures + Construction - Planning, Equipment, Site investigation and Management including Estimation with latest project management tools & network analysis for different Types of works + Principles in open channel flow, Flow controls, Hydraulic jump, Surges, Various pumps, Air vessels, Hydraulic turbines- types, classifications & performance parameters; Power house-classification & layout, storage, pondage, control of supply.
8.	28 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Water Resource Engineering + Building Materials + Railway, Airport Tunnelling & Harbour (All Topics)
			Section B : Repeat Topic of Test 7 + Repeat Topic of Test 6	Design of Steel Structure-1+ Hydrology -1 (Part Syllabus) Structural Analysis - 2 + CPM PERT - 2 (Part Syllabus) Principles of Working Stress methods, Design of tension and compression members + Hydrological cycle, Ground water hydrology, Well hydrology and related data analysis; Streams and their gauging Trusses, beams, plane frames; Rolling loads, Influence Lines, Unit load method & other methods; Free & Forced vibrations of single degree and multi degree freedom system; Suspended Cables; Concepts and use of Computer Aided Design + Analysis of Rates of various types of works; Tendering Process and Contract Management, Quality Control, Productivity, Operation Cost ; Land acquisition; Labour safety and welfare.
9.	4 <sup>th</sup> June, 2023 Sunday 2 PM - 5 PM	300	Section A: Repeat Topic of Test 8	Water Resource Engineering + Building Materials + Railway, Airport Tunnelling & Harbour (All Topics)
			Section B : Repeat Topic of Test 7	Design of Steel Structure-2 + Hydrology -2 (Part Syllabus) Design of beams & beam column connections, built-up sections, Girders, Industrial roofs, Principles of ultimate load design + River morphology; Flood, drought and their management; Capacity of Reservoirs.
10.	7 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
11.	10 AM - 1 PM 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
12.	11 <sup>th</sup> June, 2023 Sunday	300	Full Syllabus Test	Paper- I
13.	10 AM - 1 PM 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
14.	14 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
15.	2 PM - 5 PM	300	Full Syllabus Test	Paper- II



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# ESE 2023

## Mains Test Series

**Mechanical Engineering**

**9**  
Subjectwise Tests

**6**  
Full Syllabus Tests

**15**  
Total Tests

Test No.	Date/Day	Max. Marks	Subject	
1.	9 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Thermodynamics (All Topics)
			Section B: New Topic	Strength of Materials & Mechanics (All Topics)
2.	16 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Heat Transfer + Refrigeration and Air-conditioning (All Topics)
			Section B: Repeat Topic of Test 1	Thermodynamics - 1 + Strength of Materials & Mechanics - 1 (Part Syllabus) Topics: Thermodynamic systems and processes; properties of pure substance; Zeroth, First and Second Laws of Thermodynamics; Entropy, + Stresses and Strains-Compound Stresses and Strains, Bending Moment and Shear Force Diagrams, Thin and thick Cylinders, Spheres + Analysis of System of Forces
3.	23 <sup>rd</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Fluid Mechanics and Turbo Machinery (All Topics)
			Section B: Repeat Topic of Test 2 + Repeat Topic of Test 1	Heat Transfer - 1 + Refrigeration and Air-conditioning - 1 (Part Syllabus) Thermodynamics - 2 + Strength of Materials & Mechanics - 2 (Part Syllabus) Topics: Modes of heat transfer, Steady and unsteady heat conduction, Thermal resistance, Fins, Free and forced convection, Correlations for convective heat transfer + Vapour compression refrigeration, Refrigerants and Working cycles, Compressors, Condensers, Evaporators and Expansion devices, Other types of refrigeration systems like Vapour Absorption + Irreversibility and availability, Otto, Diesel and Dual cycles, analysis of thermodynamic cycles related to energy conversion: ideal and real gases; compressibility factor; Gas mixtures + Theory of Bending Stresses, Slope and deflection, Torsion, Friction, Centroid and Centre of Gravity.
4.	30 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Theory of Machines (All Topics)
			Section B: Repeat Topic of Test 3 + Repeat Topic of Test 2	Fluid Mechanics and Turbo Machinery - 1 (Part Syllabus) Heat Transfer - 2 + Refrigeration and Air-conditioning- 2 (Part Syllabus) Topics: Basic Concepts and Properties of Fluids, Manometry, Fluid Statics, Buoyancy, Equations of Motion, Bernoulli's equation and applications + Reciprocating and Rotary pumps, Pelton wheel, Kaplan and Francis Turbines, velocity diagrams, Impulse and Reaction principles, + Radiative heat transfer, Radiation heat transfer coefficient; boiling & condensation, Heat exchanger performance analysis + Vapour jet, thermo electric and Vortex tube refrigeration. Psychrometric properties and processes, Comfort chart, Comfort and industrial air conditioning, Load calculations and Heat pumps.
5.	7 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Production Engineering & Material Science (All Topics)
			Section B: Repeat Topic of Test 4 + Repeat Topic of Test 3	Theory of Machines - 1 (Part Syllabus) Fluid Mechanics and Turbo Machinery - 2 (Part Syllabus) Topics: Types of Kinematics Pair & analysis Mobility, Inversions, Velocity & Acceleration Analysis of Planar Mechanisms, Dynamic Analysis - Slider - crank mechanisms, turning moment computations, flywheel, Governors, Free and forced vibration of undamped and damped SDOF systems, Transmissibility Ratio, Vibration Isolation, Critical Speed of Shafts + Viscous flow of incompressible fluids, Laminar and Turbulent flows, Flow through pipes and head losses in pipes. + Steam and Gas Turbines, Theory of Jet Propulsion - Pulse jet and Ram Jet Engines, Reciprocating and Rotary Compressors - Theory and Applications
6.	14 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Renewable Sources of Energy + Industrial and Maintenance Engineering (All Topics)
			Section B: Repeat Topic of Test 5 + Repeat Topic of Test 4	Production Engineering & Material Science - 1 (Part Syllabus) Theory of Machines - 2 (Part Syllabus) Topics: Metal casting-Metal forming, computer Integrated manufacturing, Basic Crystallography, Heat Treatment, Ferrous and Non Ferrous Metals, Non metallic materials + CAMs with uniform acceleration and retardation, cycloidal motion, oscillating followers; Gears - Geometry of tooth profiles, Law of gearing, Involute profile, Interference, Helical, Spiral & Worm Gears, Gear Trains- Simple, compound and Epicyclic; balancing of Revolving & Reciprocating masses, Gyroscopes & its Effect on automobiles, ships and aircrafts
7.	21 <sup>st</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	IC Engine + Power Plant (All Topics)
			Section B: Repeat Topic of Test 6 + Repeat Topic of Test 5	Renewable Sources of Energy-1 + Industrial and Maintenance Engineering-1 (Part Syllabus) Production Engineering & Material Science - 2 (Part Syllabus) Topics: Solar Radiation, Solar Thermal Energy collection-Flat Plate and focusing collectors their materials & performance. Solar Thermal Energy Storage, Applications- heating, cooling and Power Generation; Solar Photovoltaic Conversion + FMS, Production planning and Control Inventory control and operations research -CPM-PERT+ Metal Joining, Machining and machine tool operations, Limits, fits and tolerances, Metrology and inspection + Alloys and Phase diagrams, Basics of Nano-materials, Mechanical Properties & Testing, Corrosion prevention & control
8.	28 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Machine Design + Mechatronics & Robotics (All Topics)
			Section B: Repeat Topic of Test 7 + Repeat Topic of Test 6	IC Engine (All Topics) Renewable Sources of Energy-2 + Industrial and Maintenance Engineering-2 (Part Syllabus) Topics: Harnessing of Wind Energy, Bio-mass and Tidal Energy - Methods and Applications, Working principles of Fuel Cells. + Failure concepts and characteristics-Reliability, Failure analysis
9.	4 <sup>th</sup> June, 2023 Sunday 2 PM - 5 PM	300	Section A: Repeat Topic of Test 8	Machine Design + Mechatronics & Robotics (All Topics)
			Section B: Repeat Topic of Test 7	Power Plant (All Topics)
10.	7 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
11.	7 <sup>th</sup> June, 2023 Wednesday 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
12.	11 <sup>th</sup> June, 2023 Sunday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
13.	11 <sup>th</sup> June, 2023 Sunday 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
14.	14 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
15.	14 <sup>th</sup> June, 2023 Wednesday 2 PM - 5 PM	300	Full Syllabus Test	Paper- II



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# ESE 2023 Mains Test Series

<b>Electrical Engineering</b>	<b>9</b> Subjectwise Tests	<b>6</b> Full Syllabus Tests	<b>15</b> Total Tests
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Test No.	Date/Day	Max. Marks	Subject	
<b>1.</b>	9 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Electrical Circuits (All Topics)
			Section B: New Topic	Control Systems (All Topics)
<b>2.</b>	16 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Systems and Signal Processing + Microprocessors (All Topics)
			Section B: Repeat Topic of Test 1	Electrical Circuits - 1 + Control Systems - 1 (Part Syllabus) Topics: Circuit elements, KCL, KVL, Node & Mesh analysis, ideal current & voltage sources, Thevenin's, Norton's, Superposition & Maximum Power Transfer theorems, Sinusoidal steady state analysis + Principles of feedback, transfer function, block diagrams and signal flow graphs, steady-state errors, transforms & their applications; Routh-hurwitz criterion, root loci. Transient & frequency response analysis Nyquist techniques, Bode plots
<b>3.</b>	23 <sup>rd</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Power Systems (All Topics)
			Section B: Repeat Topic of Test 2 + Repeat Topic of Test 1	Systems and Signal Processing - 1 + Microprocessors - 1 (Part Syllabus) Electrical Circuits - 2 + Control Systems - 2 (Part Syllabus) Topics: Representation of continuous and discrete-time signals, shifting and scaling operations, linear, time-invariant and causal systems, Fourier series representation of continuous periodic signals, Fourier transform + Microprocessors (8085 & 8086) basics and applications + Transient response of DC and AC networks, Basic filter concepts, two-port networks, three phase circuits, Magnetically coupled circuits, network graphs + Lag, lead and lead-lag compensation, stability analysis, state space model, state transition matrix, controllability & observability, PID & industrial controllers.
<b>4.</b>	30 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Electrical Machines (All Topics)
			Section B: Repeat Topic of Test 3 + Repeat Topic of Test 2	Power Systems - 1 (Part Syllabus) Systems and Signal Processing - 2 + Microprocessors - 2 (Part Syllabus) Topics: 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 + Laplace transforms, sampling theorem, Z transforms, Discrete Fourier transform, FFT, linear convolution, discrete cosine transform, FIR filter, IIR filter, bilinear transformation + Peripheral Interfacing devices & applications.
<b>5.</b>	7 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Basic Electronics Engineering + Analog Electronics + Electrical Materials (All Topics)
			Section B: Repeat Topic of Test 4 + Repeat Topic of Test 3	Electrical Machines - 1 + Power Systems - 2 (Part Syllabus) Topics: 1-phase & 3-phase transformers - connections, parallel operation, auto-transformer, energy conversion principles, Induction motors - principles, types, performance characteristics, starting and speed control, servo and stepper motors. + 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>6.</b>	14 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Power Electronics & Drives + Engineering Mathematics (All Topics)
			Section B: Repeat Topic of Test 5 + Repeat Topic of Test 4	Basic Electronics Engineering - 1 + Analog Electronics - 1 + Electrical Materials - 1 (Part Syllabus) Electrical Machines - 2 (Part Syllabus) Topics: Basics and characteristics of diodes, BJT, FET and MOSFETS, equivalent circuits, different types of amplifiers, frequency response of transistor amplifiers + Electrical Engg. Materials, crystal structures & defects, ceramic materials, insulating materials + DC machines - types, windings, generator characteristics, armature reaction and commutation, starting and speed control of motors, Synchronous machines - performance, regulation, parallel operation of generators, motor starting, characteristics and applications
<b>7.</b>	21 <sup>st</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Computer Fundamentals + Electrical & Electronic Measurements (All Topics)
			Section B: Repeat Topic of Test 6 + Repeat Topic of Test 5	Power Electronics & Drives - 1 + Engineering Mathematics - 1 (Part Syllabus) Basic Electronics Engineering - 2 + Analog Electronics - 2 (Part Syllabus) + Electrical Materials - 2 (Part Syllabus) Topics: 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 + Matrix theory, Eigen values & Eigen vectors, system of linear equations, Numerical methods for solution of non-linear algebraic equations & differential equations, integral calculus, partial derivatives, maxima & minima, Line, Surface & Volume Integrals + Operational amplifiers - characteristics and applications, oscillators and other circuits, feedback amplifiers + 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>8.</b>	28 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Electromagnetic Theory + Digital Electronics + Communication Systems (All Topics)
			Section B: Repeat Topic of Test 7 + Repeat Topic of Test 6	Computer Fundamentals - 1 + Electrical and Electronic Measurements - 1 (Part Syllabus) Power Electronics & Drives - 2 + Engineering Mathematics - 2 (Part Syllabus) Topics: Number systems, Boolean algebra, arithmetic functions, Basic Architecture, Central Processing Unit, I/O and Memory Organisation + Principles of measurement, accuracy, precision and standards; error analysis, potentiometers; moving coil, moving iron, dynamometer and induction type instruments, measurement of voltage, current, power, energy and power factor + Principles of choppers and inverters, basic 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 + 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>9.</b>	4 <sup>th</sup> June, 2023 Sunday 2 PM - 5 PM	300	Section A: Repeat Topic of Test 8	Electromagnetic Theory + Digital Electronics + Communication Systems (All Topics)
			Section B: Repeat Topic of Test 7	Computer Fundamentals - 2 + Electrical and Electronic Measurements - 2 (Part Syllabus) Topics: Peripheral devices, data representation and programming, basics of Operating system and networking, virtual memory, file systems; Elements of programming languages, typical examples + Instrument transformers, bridges, digital voltmeters and multi-meters, phase, time and frequency measurement, Q-meters, oscilloscopes, potentiometric recorders, basics of sensors, Transducers, basics of data acquisition systems.
<b>10.</b>	7 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
<b>11.</b>	10 AM - 1 PM 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
<b>12.</b>	11 <sup>th</sup> June, 2023 Sunday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
<b>13.</b>	2 PM - 5 PM	300	Full Syllabus Test	Paper- II
<b>14.</b>	14 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
<b>15.</b>	2 PM - 5 PM	300	Full Syllabus Test	Paper- II



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# ESE 2023 Mains Test Series

<b>Electronics &amp; Telecom Engg.</b>	<b>9</b> Subjectwise Tests	<b>6</b> Full Syllabus Tests	<b>15</b> Total Tests
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Test No.	Date/Day	Max. Marks	Subject	
<b>1.</b>	9 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Network Theory (All Topics)
			Section B : New Topic	Control Systems (All Topics)
<b>2.</b>	16 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Signals and Systems + Microprocessors and Microcontroller (All Topics)
			Section B : Repeat Topic of Test 1	Network Theory - 1 + Control Systems - 1 (Part Syllabus) Topics: Ohm's & Kirchoff's laws, Wye-Delta transformation, mesh & nodal analysis, DC circuits. Single-phase AC circuits, Steady state sinusoidal analysis, frequency domain analysis of RLC circuits, Circuit theorems + Feedback systems-open & close loop types, Signal flow graphs. Transient and Steady state analysis. Stability analysis, Routh-Hurwitz criteria, Root loci. Frequency response analysis, Nyquist/Bode plots.
<b>3.</b>	23 <sup>rd</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Analog and Digital Communication Systems (All Topics)
			Section B : Repeat Topic of Test 2 + Repeat Topic of Test 1	Signals and Systems - 1 + Microprocessors and Microcontroller - (Part Syllabus) Network Theory - 2 + Control Systems - 2 (Part Syllabus) Topics: Classification of signals and systems; Application of signal and system theory; System realization; Transforms & their applications + Microprocessors (8085 & 8086) basics, interrupts, instruction sets + Linear constant coefficient differential equations - Time domain analysis of RLC circuits, Solution of network equations using Laplace transforms. 2-port network parameters-driving point & transfer functions. Network graphs & matrices + Design of control systems, compensators, elements of lead/lag compensation, PID and industrial controllers. State equations for networks.
<b>4.</b>	30 <sup>th</sup> Apr, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Electronic Devices & Circuits + Advanced Communication Topics (All Topics)
			Section B : Repeat Topic of Test 3 + Repeat Topic of Test 2	Analog & Digital Communication Systems - 1 (Part Syllabus) Signals and Systems - 2 + Microprocessors and Microcontroller - (Part Syllabus) Topics: Random signals, noise, probability theory. Analog communication Systems - AM, FM, transmitters, receivers, theory, practice, standards, SNR comparison + System realization; Transforms & their applications; DSP: Discrete time signals/systems, uses; Digital filters: FIR/IIR types, design, speech/audio/radar signal processing uses + DMA, interfacing controllers and uses. Microcontrollers and Embedded systems.
<b>5.</b>	7 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Computer Organization and Architecture + Materials Science (All Topics)
			Section B : Repeat Topic of Test 4 + Repeat Topic of Test 3	Electronic Devices & Circuits - 1 + Advanced Communications Topics - 1 (Part Syllabus) Analog & Digital Communication Systems - 2 (Part Syllabus) Topics: Basics of semiconductors. Diode basics and characteristics, Diodes for different uses + Communication networks: Principles/practices /technologies /uses /OSI model/security; Basic packet multiplexed streams/scheduling; Cellular networks, types, analysis, protocols (TCP/TCPIP); + Information theory. Digital communication systems - Analog versus digital communication & applications, basics, sampling, quantizing, coding, PCM, DPCM, multiplexing-audio/video, Digital modulation: ASK, FSK, PSK.
<b>6.</b>	14 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Electromagnetics + Basic Electrical Engineering (All Topics)
			Section B : Repeat Topic of Test 5 + Repeat Topic of Test 4	Computer Organization and Architecture -1 + Materials Science-1 (Part Syllabus) Electronic Devices & Circuits - 2 + Advanced Communications Topics - 2 (Part Syllabus) Topics: Basic architecture, CPU, I/O organisation, memory organisation, peripheral devices, trends; Hardware /software issues; Data representation & Programming; Operating systems-basics, processes, characteristics, applications + Electrical Engineering materials. Crystal structure & defects. Ceramic materials- structures, composites, processing & uses. Insulating laminates for electronics, structures, properties & uses + BJT, JFETS, MOSFETS basics & characteristics. Basics of optoelectronics & its applications, optical sources/detectors + Microwave & satellite communication: Terrestrial/space type LOS systems, block schematics link calculations, system design; Communication satellites, orbits, characteristics, systems, uses; Fibre-optic communication systems, block schematics, link calculations, system design.
<b>7.</b>	21 <sup>st</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Advanced Electronics + Electronic Measurements and Instrumentation (All Topics)
			Section B : Repeat Topic of Test 6 + Repeat Topic of Test 5	Electromagnetics -1 + Basic Electrical Engineering - 1 (Part Syllabus) Computer Organization and Architecture -2 + Materials Science-2 (Part Syllabus) Topics: Elements of vector calculus, Maxwell's equations-basic concepts, Gauss', Stokes' theorems. Wave propagation through different media + Electro-magnetism, Faraday's & Lenz's laws, induced EMF and its uses. Transformers, efficiency. Basics of induction machines + Memory management, virtual memory, file systems, protection & security; Data bases, different types, characteristics and design; Transactions and concurrency control; Elements of programming languages, typical examples + Magnetic materials, basics, classification, ferrites, ferro/para-magnetic materials and components. Nano materials-basics, preparation, purification, sintering, nano particles and uses. Nano-optical/magnetic/electronic materials and uses. Superconductivity, uses.
<b>8.</b>	28 <sup>th</sup> May, 2023 Sunday 2 PM - 5 PM	300	Section A: New Topic	Digital Circuits + Analog Circuits (All Topics)
			Section B : Repeat Topic of Test 7 + Repeat Topic of Test 6	Advanced Electronics -1 + Electronic Measurements and Instrumentation -1 (Part Syllabus) Electromagnetics -2 + Basic Electrical Engineering - 2 (Part Syllabus) Topics : VLSI technology : Processing, lithography, interconnects, packaging, testing; VLSI design; principles, MUX/ROM/PLA-based design, moore and mealy circuit design; + Principles of measurement, accuracy, precision and standards; Analog systems for measurement, measuring instruments for different applications; Static/dynamic characteristics of measurement systems, errors, statistical analysis and curve fitting + Transmission Lines-different types, basics, Smith's chart, impedance matching/transformation, S-parameters, pulse excitation, uses. Waveguides-basics, rectangular types, modes, cut-off frequency, dispersion, dielectric types. Antennas-radiation pattern, monopoles/dipoles, gain, arrays-active/passive, theory, uses + Basics of DC machines and synchronous machines. Electrical power sources basics: hydroelectric, thermal, nuclear, wind, solar, batteries & their uses.
<b>9.</b>	4 <sup>th</sup> June, 2023 Sunday 2 PM - 5 PM	300	Section A : Repeat Topic of Test 8	Digital Circuits + Analog Circuits (All Topics)
			Section B: Repeat Topic of Test 7	Advanced Electronics - 2 + Electronic Measurements and Instrumentation - 2 (Part Syllabus) Topics : Pipeline concepts & functions, design for testability + Measurement systems for non-electrical quantities; Digital systems for measurement, Basics of telemetry; Different types of transducers and displays; Data acquisition system basics. CRO and bridge measurement.
<b>10.</b>	7 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
<b>11.</b>	7 <sup>th</sup> June, 2023 Wednesday 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
<b>12.</b>	11 <sup>th</sup> June, 2023 Sunday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
<b>13.</b>	11 <sup>th</sup> June, 2023 Sunday 2 PM - 5 PM	300	Full Syllabus Test	Paper- II
<b>14.</b>	14 <sup>th</sup> June, 2023 Wednesday 10 AM - 1 PM	300	Full Syllabus Test	Paper- I
<b>15.</b>	14 <sup>th</sup> June, 2023 Wednesday 2 PM - 5 PM	300	Full Syllabus Test	Paper- II

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