# GATE-2024

# *Online* Test Series

## Mechanical Engineering Schedule

| No.of Tests : 54 + 54 *free* practice tests of GATE-2023 Online Test Series | | |
|---|---|---|
| | GATE - 2024 Test Series | Practice Tests GATE - 2023 OTS |
| Topic wise Tests | 25 | 25 |
| Grand Tests (Subject Wise Tests + Multi-Subject Wise Tests) | 17 | 17 |
| Full Length Mock Tests | 12 | 12 |
| Total Tests - 108 | | |

**Note:**

★ The Syllabus considered as per Previoues year Notification of GATE. ACE Engineering Academy does not take any responsibility for deviations in syllabus in the final exam.

★ The Dates of Tests may Change according to the GATE-2024 Exam schedule.

★ Tests will be activated at 06:00 pm on the scheduled day.

★ All tests will be active till GATE-2024 Exam.

# Topic wise Tests

*(No.of Questions: 15, Time duration: 42 Minutes and Marks: 25 M)*

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| Test-01 | **Engineering Mathematics-1:**<br>Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors.<br>Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.<br>Differential equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations. | 17-04-2023 |
| Test-02 | **Engineering Mathematics-2:**<br>Complex variables: Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.<br>Probability and Statistics: Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.<br>Numerical Methods: Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations. | |
| Test-03 | **Engineering Mechanics:**<br>Free-body diagrams and equilibrium; friction and its application including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations, Lagrange's equation. | |
| Test-04 | **Heat Transfer-1:**<br>Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; | 26-04-2023 |
| Test-05 | **Heat Transfer-2:**<br>Unsteady heat conduction, lumped parameter system, Heisler's charts; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan Boltzmann law, Wien's displacement law, black and grey surfaces, view factors, radiation network analysis. | |

| Test No | Name of the Test | Date of Activation |
|---------|------------------|--------------------|
| Test-06 | **Thermodynamics-1:** Thermodynamic systems and processes; behaviour of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; | 03-05-2023 |
| Test-07 | **Thermodynamics-2:** Properties of pure substances,Thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations. vapour and gas power cycles, concepts of regeneration and reheat. | |
| Test-08 | **Thermodynamics-3:** Air and gas compressors; I.C. Engines: Air-standard Otto, Diesel and dual cycles. Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes. | |
| Test-09 | **Theory of Machines and Vibrations-1:** Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; flywheels; Cams; gears and gear trains; | 10-05-2023 |
| Test-10 | **Theory of Machines and Vibrations-2:** Governors; balancing of reciprocating and rotating masses; gyroscope. *Vibrations:* Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds of shafts. | |
| Test-11 | **Strength of Materials-1:** Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; shear force and bending moment diagrams; thermal stresses; strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength | |
| Test-12 | **Strength of Materials-2:** Bending and shear stresses; concept of shear centre; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thin cylinders. | |
| Test-13 | **Fluid Mechanics-1:** Fluid properties; fluid statics, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation. | 17-05-2023 |
| Test-14 | **Fluid Mechanics-2:** Viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes, bends and fittings. | |
| Test-15 | **Fluid Mechanics-3:** Dimensional analysis; Basics of compressible fluid flow; Turbomachinery: Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplan turbines, Steam and gas turnine | |

| Test No | Name of the Test | Date of Activation |
|---------|------------------|--------------------|
| Test-16 | **Machine Design-1:** <br> Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; | 24-05-2023 |
| Test-17 | **Machine Design-2:** <br> Shafts, gears, rolling and sliding contact bearings, brakes and clutches, springs. | |
| Test-18 | **Production-1:** <br> *Casting, Forming and Joining Processes* : Different types of castings, design of patterns, moulds and cores; solidification and cooling; riser and gating design. Plastic deformation and yield criteria; fundamentals of hot and cold working processes; load estimation for bulk (forging, rolling, extrusion, drawing) and sheet (shearing, deep drawing, bending) metal forming processes; *principles of powder metallurgy* . Principles of welding, brazing, soldering and adhesive bonding. | 31-05-2023 |
| Test-19 | **Production-2:** <br> *Machining and Machine Tool Operations* : Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, jigs and fixtures; abrasive machining processes; NC/CNC machines and CNC programming. Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; *additive manufacturing.* | |
| Test-20 | **Production-3:** <br> *Metrology and Inspection* : Limits, fits and tolerances; linear and angular measurements; comparators; interferometry; form and finish measurement; alignment and testing methods; tolerance analysis in manufacturing and assembly; *concepts of coordinate-measuring machine (CMM)* .Engineering Materials: Structure and properties of engineering materials, phase diagrams, heat treatment, stress-strain diagrams for engineering materials. | |
| Test-21 | **Industrial Management and Operational Research-1:** <br> Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing; Inventory Control: Deterministic models; safety stock inventory control systems. | 07-06-2023 |
| Test-22 | **Industrial Management and Operational Research-2:** <br> Linear programming, simplex method, transportation, assignment, network flow models, simple queuing models, PERT and CPM. | |
| Test-23 | **Verbal Ability:** <br> Basic English grammar: tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech. <br> Basic vocabulary: words, idioms, and phrases in context. <br> Reading and comprehension. <br> Narrative sequencing. | 14-06-2023 |

| Test No | Name of the Test | Date of Activation |
|---------|------------------|--------------------|
| Test-24 | **Quantitative Aptitude:**<br>Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables.<br>Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, and series<br>Mensuration and geometry.<br>Elementary statistics and probability. | 14-06-2023 |
| Test-25 | **Analytical Aptitude:**<br>Logic: deduction and induction, Analogy, Numerical relations and reasoning<br>**Spatial Aptitude:**<br>Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions | |

## Subject Wise Grand Tests
### (No.of Questions: 30, Time duration: 83 Minutes and Marks: 50 M)

| | | |
|---------|------------------|--------------------|
| Test-26 | Engineering Mathematics | 28-06-2023 |
| Test-27 | Thermodynamics | |
| Test-28 | Heat Transfer | 05-07-2023 |
| Test-29 | Fluid Mechanics & Turbo Machinery | |
| Test-30 | Engineering Mechanics | 12-07-2023 |
| Test-31 | Strength of Materials | |
| Test-32 | Theory of Machines and Vibrations | 19-07-2023 |
| Test-33 | Machine Design | |
| Test-34 | Production | 26-07-2023 |
| Test-35 | Industrial Management and Operational Research | |
| Test-36 | General Aptitude | 02-08-2023 |

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| | **Full Length Mock Test - 1st Series**<br>*(No.of Questions: 65, Time duration: 180 Minutes and Marks: 100 M)* | |
| Test-37 | Full Length Mock Test-1 | 16-08-2023 |
| Test-38 | Full Length Mock Test-2 | 23-08-2023 |
| Test-39 | Full Length Mock Test-3 | 30-08-2023 |
| Test-40 | Full Length Mock Test-4 | 13-09-2023 |
| Test-41 | Full Length Mock Test-5 | 20-09-2023 |
| Test-42 | Full Length Mock Test-6 | 27-09-2023 |

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| | **Multi-Subject Wise Grand Tests**<br>*(No.of Questions: 30, Time duration: 83 Minutes and Marks: 50 M)* | |
| Test-43 | Strength of Materials & Engineering Mechanics | 04-10-2023 |
| Test-44 | Fluid Mechanics & Turbo Machinery, Heat Transfer | |
| Test-45 | Thermodynamics | 11-10-2023 |
| Test-46 | Machine Design & Theory of Machines and Vibrations | |
| Test-47 | Production & Industrial Management and Operational Research | 18-10-2023 |
| Test-48 | Engineering Mathematics & General Aptitude | |

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| | **Full Length Mock Test - 2nd Series**<br>*(No.of Questions: 65, Time duration: 180 Minutes and Marks: 100 M)* | |
| Test-49 | Full Length Mock Test-7 | 01-11-2023 |
| Test-50 | Full Length Mock Test-8 | 08-11-2023 |
| Test-51 | Full Length Mock Test-9 | 29-11-2023 |
| Test-52 | Full Length Mock Test-10 | 06-12-2023 |
| Test-53 | Full Length Mock Test-11 | 03-01-2024 |
| Test-54 | Full Length Mock Test-12 | 10-01-2024 |

# Free Practice Tests of GATE-2023 Online Test Series

## Topic wise Tests

*(No.of Questions: 15, Time duration: 42 Minutes and Marks: 25 M)*

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| Test-01 | **Engineering Mathematics-1:**<br>Linear Algebra: Matrix algebra, systems of linear equations, eigenvalues and eigenvectors.<br>Calculus: Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals; double and triple integrals; partial derivatives, total derivative, Taylor series (in one and two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.<br>Differential equations: First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations. | 20-03-2023 |
| Test-02 | **Engineering Mathematics-2:**<br>Complex variables: Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.<br>Probability and Statistics: Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.<br>Numerical Methods: Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations. | |
| Test-03 | **Engineering Mechanics:**<br>Free-body diagrams and equilibrium; friction and its application including rolling friction, belt-pulley, brakes, clutches, screw jack, wedge, vehicles, etc.; trusses and frames; virtual work; kinematics and dynamics of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations, Lagrange's equation. | |
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| Test-19 | **Production-2:**<br>*Machining and Machine Tool Operations* : Mechanics of machining; basic machine tools; single and multi-point cutting tools, tool geometry and materials, tool life and wear; economics of machining; principles of non-traditional machining processes; principles of work holding, jigs and fixtures; abrasive machining processes; NC/CNC machines and CNC programming. Computer Integrated Manufacturing: Basic concepts of CAD/CAM and their integration tools; *additive manufacturing.* | |
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| Test-21 | **Industrial Management and Operational Research-1:**<br>Forecasting models, aggregate production planning, scheduling, materials requirement planning; lean manufacturing; Inventory Control: Deterministic models; safety stock inventory control systems. | |
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ACE Engineering Academy

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| **Subject Wise Grand Tests** *(No.of Questions: 30, Time duration: 83 Minutes and Marks: 50 M)* | | |
| Test-26 | Engineering Mathematics | 25-03-2023 |
| Test-27 | Thermodynamics | |
| Test-28 | Heat Transfer | |
| Test-29 | Fluid Mechanics & Turbo Machinery | |
| Test-30 | Engineering Mechanics | |
| Test-31 | Strength of Materials | |
| Test-32 | Theory of Machines and Vibrations | |
| Test-33 | Machine Design | |
| Test-34 | Production | |
| Test-35 | Industrial Management and Operational Research | |
| Test-36 | General Aptitude | |

| Test No | Name of the Test | Date of Activation |
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| **Multi-Subject Wise Grand Tests** *(No.of Questions: 30, Time duration: 83 Minutes and Marks: 50 M)* | | |
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| Test-38 | Fluid Mechanics & Turbo Machinery, Heat Transfer | |
| Test-39 | Thermodynamics | |
| Test-40 | Machine Design & Theory of Machines and Vibrations | |
| Test-41 | Production & Industrial Management and Operational Research | |
| Test-42 | Engineering Mathematics & General Aptitude | |

| Test No | Name of the Test | Date of Activation |
|---|---|---|
| **Full Length Mock Tests** *(No.of Questions: 65, Time duration: 180 Minutes and Marks: 100 M)* | | |
| Test-43 | Full Length Mock Test-1 | 01-04-2023 |
| Test-44 | Full Length Mock Test-2 | |
| Test-45 | Full Length Mock Test-3 | |
| Test-46 | Full Length Mock Test-4 | |
| Test-47 | Full Length Mock Test-5 | |
| Test-48 | Full Length Mock Test-6 | |
| Test-49 | Full Length Mock Test-7 | |
| Test-50 | Full Length Mock Test-8 | |
| Test-51 | Full Length Mock Test-9 | |
| Test-52 | Full Length Mock Test-10 | |
| Test-53 | Full Length Mock Test-11 | |
| Test-54 | Full Length Mock Test-12 | |