GATE-2021 Online Test Series

Production and Industrial Engineering - Schedule

No.of Test : 52 (18 Topic wise Tests + 22 Grand Tests + 12 Full Length Mock Tests)

+ *Free* 44 practice Tests of GATE-2020 Online Test Series

Topic wise Tests

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-01	**Engineering Mathematics-1:** Linear Algebra, Calculus, Differential Equations	15	25	45 mins	03-06-2020
Test-02	**Engineering Mathematics-2:** Complex Variables, Numerical Methods and Probability and Statistics.	15	25	45 mins	
Test-03	**Engineering Mechanics:** Applied Mechanics: Engineering mechanics – equivalent force systems, free body concepts, equations of equilibrium; trusses.	15	25	45 mins	
Test-04	**Heat Transfer:** Heat transfer – basic applicationsof conduction, convection and radiation.	15	25	45 mins	
Test-05	**Theory of Machines and Vibrations:** Analysis of planar mechanisms, cams and followers; governors and fly wheels.	15	25	45 mins	12-06-2020
Test-06	**Thermodynamics:** Thermodynamics – zeroth, first and second law of thermodynamics, thermodynamic system and processes, calculation of work and heat for systems and control volumes; air standard cycles.	15	25	45 mins	
Test-07	**Strength of Materials-1:** Strength of materials – stress, strain and their relationship; failure theories, Mohr's circle(stress). Torsion	15	25	45 mins	19-06-2020
Test-08	**Strength of Materials-2:** Deflection of beams, bending and shear stress, Euler's theory of columns.Thick and thin cylinders;	15	25	45 mins	
Test-09	**Fluid Mechanics:** Fluid mechanics – fluid statics, Bernoulli's equation, flow through pipes, equations of continuity and momentum, capillary action, laminar and turbulent flows, Dimensional analysis;	15	25	45 mins	
Test-10	**Machine Design:** Design of bolted, riveted and welded joints; interference/shrink fit joints; design of shafts, keys, spur gears, belt drives, brakes and clutches; pressure vessels. Friction and lubrication, couplings	15	25	45 mins	
Test-11	**Production-1:** *Casting:* Types of casting processes and applications; Sand casting: patterns – types, materials and allowances; molds and cores–materials, making, and testing; design of gating system and riser; casting techniques of cast iron, steels, and nonferrous metals and alloys; analysis of solidification and microstructure development; Other casting techniques: Pressure die casting, Centrifugal casting, Investment casting, Shell mold casting; Casting defects and their inspection by non-destructive testing. *Metal Forming* : Stress-strain relations in elastic and plastic deformation; von Mises and Tresca yield criteria, Concept of flow stress; Hot, warm and cold working; Bulk forming processes - forging, rolling, extrusion and wire drawing; Sheet metal working processes – blanking, punching, bending, stretch forming, spinning and deep drawing; Ideal work and slab analysis; Defects in metal working and their causes. *Joining of Materials:* Classification of joining processes; Principles of fusion welding processes using different heat sources (flame, arc, resistance, laser, electron beam), Heat transfer and associated losses; Arc welding processes - SMAW, GMAW, GTAW, plasma arc, submerged arc welding processes; Principles of solid state welding processes - friction welding, friction stir welding, ultrasonic welding; Welding defects - causes and inspection; Principles of adhesive joining, brazing and soldering processes.	15	25	45 mins	26-06-2020

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-12	**Production-2:** *Machining:* Orthogonal and oblique machining, Single point cutting tool and tool signature, Chip formation, cutting forces, Merchant's analysis, Specific cutting energy and power; Machining parameters and material removal rate; tool materials, Tool wear and tool life; Thermal aspects of machining, cutting fluids, machinability; Economics of machining; Machining processes - turning, taper turning, thread cutting, drilling, boring, milling, gear cutting, thread production; Finishing processes – grinding, honing, lapping and super-finishing. *Machine Tools:* Lathe, milling, drilling and shaping machines – construction and kinematics; Jigs and fixtures – principles, applications, and design. *Advanced Manufacturing:* Principles and applications of USM, AJM, WJM, AWJM, EDM and Wire EDM, LBM, EBM, PAM, CHM, ECM; Effect of process parameters on material removal rate, surface roughness and power consumption; *Additive manufacturing techniques.* *Computer Integrated Manufacturing:* Basic concepts of CAD and CAM, Geometric modeling, CNC; Automation in Manufacturing; Industrial Robots – configurations, drives and controls; Cellular manufacturing and FMS - Group Technology, CAPP.	15	25	45 mins	26-06-2020
Test-13	**Production-3:** *Engineering Materials:* Structure, physical and mechanical properties, and applications of common engineering materials (metals and alloys, semiconductors, ceramics, polymers, and composites – metal, polymer and ceramic based); Iron-carbon equilibrium phase diagram; Heat treatment of metals and alloys and its influence on mechanical properties; Stress-strain behavior of metals and alloys. *Powder Processing:* Production of metal/ceramic powders, compaction and sintering of metals and ceramic powders, Cold and hot isostatic pressing. *Polymers and Composites:* Polymer processing – injection, compression and blow molding, extrusion, calendaring and thermoforming; Molding of composites. *Metrology and Inspection:* Accuracy and precision; Types of errors; Limits, fits and tolerances; Gauge design, Interchangeability, Selective assembly; Linear, angular, and form measurements (straightness, flatness, roundness, runout and cylindricity) by mechanical and optical methods; Inspection of screw threads and gears; Surface roughness measurement by contact and non-contact methods	15	25	45 mins	
Test-14	**Industrial Management and Operational Research-1:** Engineering Economy and Costing: Elementary cost accounting and methods of depreciation; Break-even analysis; Techniques for evaluation of capital investments; Financial statements; Activity based costing. Production control: Forecasting techniques – causal and time series models, moving average, exponential smoothing, trend and seasonality; Aggregate production planning; Master production scheduling; MRP, MRP-II and ERP; Routing, scheduling and priority dispatching; Push and pull production systems, concepts of Lean and JIT manufacturing systems; Logistics, distribution, and supply chain management; Inventory – functions, costs, classifications, deterministic inventory models, quantity discount; Perpetual and periodic inventory control systems.	15	25	45 mins	
Test-15	***Industrial Management and Operational Research-2:*** *Work System Design: Taylor's scientific management, Gilbreths's contributions; Productivity – concepts and measurements; Method study, Micro-motion study, Principles of motion economy; Work measurement – time study, Work sampling, Standard data, PMTS; Ergonomics; Job evaluation and merit rating.* *Facility Design: Facility location factors and evaluation of alternate locations; Types of plant layout and their evaluation; Computer aided layout design techniques; Assembly line balancing; Materials handling systems.* *Operation Research: Linear programming – problem formulation, simplex method, duality and sensitivity analysis; Transportation and assignment models; Integer programming; Constrained and unconstrained nonlinear optimization; Markovian queuing models; Simulation – manufacturing applications.* Project management: Scheduling techniques – Gantt chart, CPM, PERT and GERT	15	25	45 mins	
Test-16	*Quality Management: Quality – concept and costs; Statistical quality control – process capability analysis, control charts for variables and attributes and acceptance sampling; Six sigma; Total quality management; Quality assurance and certification - ISO 9000, ISO14000.* *Reliability and Maintenance: Reliability, availability and maintainability; Distribution of failure and repair times; Determination of MTBF and MTTR, Reliability models; Determination of system reliability; Preventive and predictive maintenance and replacement, Total productive maintenance.* *Product Design and Development: Principles of product design, tolerance design; Quality and cost considerations; Product life cycle; Standardization, simplification, diversification; Value engineering and analysis; Concurrent engineering; Design for "X".*	15	25	45 mins	
Test-17	Verbal Ability: Basic English grammar: tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech Basic vocabulary: words, idioms, and phrases in context Reading and comprehension Narrative sequencing	15	25	45 mins	03-07-2020

Test-18	Numarical Ability: Quantitative Aptitude: Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, and series Mensuration and geometry Elementary statistics and probability. Analytical Aptitude: Logic: deduction and induction Analogy Numerical relations and reasoning Spatial Aptitude: Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions.	15	25	45 mins	

Subject Wise Grand Tests - 1st Series

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-19	Engineering Mathematics	30	50	90 mins	17-07-202
Test-20	Thermodynamics	30	50	90 mins	
Test-21	Fluid Mechanics & Heat Transfer	30	50	90 mins	24-07-2020
Test-22	Engineering Mechanics & Strength of Materials	30	50	90 mins	31-07-2020
Test-23	Theory of Machines and Vibrations & Machine Design	30	50	90 mins	07-08-2020
Test-24	Production	30	50	90 mins	
Test-25	Industrial Management and Operational Research	30	50	90 mins	13-08-2020
Test-26	General Aptitude	30	50	90 mins	

Full Length Mock GATE Test - 1st Series (As per GATE pattern)

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-27	Full Length GATE Mock Test-1	65	100	180 mins	21-08-2020
Test-28	Full Length GATE Mock Test-2	65	100	180 mins	28-08-2020
Test-29	Full Length GATE Mock Test-3	65	100	180 mins	04-09-2020

Subject Wise Grand Tests - 2nd Series

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-30	Engineering Mathematics	30	50	90 mins	11-09-2020
Test-31	Thermodynamics	30	50	90 mins	
Test-32	Fluid Mechanics & Heat Transfer	30	50	90 mins	18-09-2020
Test-33	Engineering Mechanics & Strength of Materials	30	50	90 mins	25-09-2020
Test-34	Theory of Machines and Vibrations & Machine Design	30	50	90 mins	02-10-2020
Test-35	Production	30	50	90 mins	
Test-36	Industrial Management and Operational Research	30	50	90 mins	09-10-2020
Test-37	General Aptitude	30	50	90 mins	

Full Length Mock GATE Tests- 2nd Series

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-38	Full Length GATE Mock Test-4	65	100	180 mins	16-10-2020
Test-39	Full Length GATE Mock Test-5	65	100	180 mins	23-10-2020
Test-40	Full Length GATE Mock Test-6	65	100	180 mins	30-10-2020

Multi-Subject Wise Grand Tests

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-41	Engineering Mechanics & Strength of Materials	30	50	90 mins	06-11-2020
Test-42	Fluid Mechanics, Heat Transfer & Thermodynamics	30	50	90 mins	13-11-2020
Test-43	Theory of Machines and vibrations & Machine Design	30	50	90 mins	
Test-44	Production	30	50	90 mins	02-11-2020
Test-45	Industrial Management and Operational Research	30	50	90 mins	
Test-46	Engineering Mathematics & General Aptitude	30	50	90 mins	

Full Length Mock GATE Tests - 3rd Series

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-47	Full Length GATE Mock Test-7	65	100	180 mins	04-12-2020
Test-48	Full Length GATE Mock Test-8	65	100	180 mins	11-12-2020
Test-49	Full Length GATE Mock Test-9	65	100	180 mins	06-01-2021
Test-50	Full Length GATE Mock Test-10	65	100	180 mins	13-01-2021
Test-51	Full Length GATE Mock Test-11	65	100	180 mins	20-01-2021
Test-52	Full Length GATE Mock Test-12	65	100	180 mins	27-01-2021

Free Practice Tests of GATE-2020 Online Test Series

Topic wise Tests

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
PI_P01	**Engineering Mathematics-1:** Linear Algebra, Calculus, Differential Equations	15	25	45 mins	
PI_P02	**Engineering Mathematics-2:** Complex Variables, Numerical Methods and Probability and Statistics.	15	25	45 mins	
PI_P03	**Engineering Mechanics:** Applied Mechanics: Engineering mechanics – equivalent force systems, free body concepts, equations of equilibrium; trusses.	15	25	45 mins	
PI_P04	**Heat Transfer:** Heat transfer – basic applicationsof conduction, convection and radiation.	15	25	45 mins	
PI_P05	**Theory of Machines and Vibrations:** Analysis of planar mechanisms, cams and followers; governors and fly wheels.	15	25	45 mins	
PI_P06	**Thermodynamics:** Thermodynamics – zeroth, first and second law of thermodynamics, thermodynamic system and processes, calculation of work and heat for systems and control volumes; air standard cycles.	15	25	45 mins	
PI_P07	**Strength of Materials-1:** Strength of materials – stress, strain and their relationship; failure theories, Mohr's circle(stress).	15	25	45 mins	
PI_P08	**Strength of Materials-2:** Deflection of beams, bending and shear stress, Euler's theory of columns.	15	25	45 mins	
PI_P09	**Fluid Mechanics:** Fluid mechanics – fluid statics, Bernoulli's equation, flow through pipes, equations of continuity and momentum, capillary action, contact angle and wetting.	15	25	45 mins	
PI_P10	**Machine Design:** Design of bolted, riveted and welded joints; interference/shrink fit joints; design of shafts, keys, spur gears, belt drives, brakes and clutches; pressure vessels.	15	25	45 mins	

PI_P11	***Production-1:*** *Casting:* Types of casting processes and applications; patterns – types and materials; allowances; moulds and cores – materials, making, and testing; casting techniques of cast iron, steels and nonferrous metals and alloys; analysis of solidification and microstructure development; design of gating and riser; origin of defects. *Metal Forming:* Stress-strain relations in elastic and plastic deformation; concept of flow stress; hot and cold working – forging, rolling, extrusion and wire drawing; sheet metal working processes – blanking, bending and deep drawing; ideal work and slab analysis; origin of metal working defects. *Joining of materials:* Principles of fusion welding processes (manual metal arc, MIG, TIG, plasma arc, submerged arc welding processes)–different heat sources (flame, arc, resistive, laser, electron beam), and heat transfer and associated losses, flux application, feeding of filler rod; Principles of solid state welding processes (friction,explosive welding, ultrasonic welding processes); Principles of adhesive, brazing and soldering processes; Origins of welding defects.	15	25	45 mins	**20-04-2020**
PI_P12	***Production-2:*** *Machine Tools and Machining:* Basic machine tools like centre lathe, milling machine, and drilling machine – construction and kinematics; machining processes - turning, taper turning, thread cutting, drilling, boring, milling, gear cutting, thread production, grinding; geometry of single point cutting tools, chip formation, cutting forces, specific cutting energy and power requirements, Merchant's analysis; basis ofselection of machining parameters; tool materials, tool wear and tool life, economics of machining, thermal aspects of machining, cutting fluids, machinability; *Jigs and fixtures* – principles, applications, and design. *Non-traditional Manufacturing:* Principles, applications, effect of process parameters on MRR and product quality of non-traditional machining processes – USM, AJM, WJM, AWJM, EDM and Wire cut EDM, LBM, EBM, PAM, CHM, ECM. *Computer Integrated Manufacturing:* Basic concepts of CAD – geometric modeling, CAM – CNC and robotics – configurations, drives and controls, Group Technology and its applications – CAPP, cellular manufacturing and FMS.	15	25	45 mins	
PI_P13	***Production-3:*** *Engineering Materials:* Structure and properties correlation;engineering materials (metals, ceramics, polymers and composites) – properties and applications; stress strain behavior of metals and alloys;iron-carbon phase diagram, heat treatment of metals and alloys, its influence on mechanical properties. *Powder processing:* Production of metal/ceramic powders, compaction and sintering of metals and ceramic powders. *Polymers and Composites:* Plastic processing – injection, compression and blow molding, extrusion, calendaring and thermoforming; molding of composites. *Metrology and Inspection:* Limits, fits, and tolerances, gauge design, interchangeability, selective assembly; linear, angular, and form measurements (straightness, squareness, flatness, roundness, and cylindricity) by mechanical and optical methods; inspection of screw threads and gears; surface finish measurement by contact and non-contact methods;tolerance analysis in manufacturing and assembly.	15	25	45 mins	

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
PI_P14	**Industrial Management and Operational Research-1:** Engineering Economy and Costing: Elementary cost accounting and methods of depreciation; Break-even analysis; Techniques for evaluation of capital investments; Financial statements; Activity based costing. Production control: Forecasting techniques – causal and time series models, moving average, exponential smoothing, trend and seasonality; Aggregate production planning; Master production scheduling; MRP, MRP-II and ERP; Routing, scheduling and priority dispatching; Push and pull production systems, concepts of Lean and JIT manufacturing systems; Logistics, distribution, and supply chain management; Inventory – functions, costs, classifications, deterministic inventory models, quantity discount; Perpetual and periodic inventory control systems.	15	25	45 mins	
PI_P15	***Industrial Management and Operational Research-2:*** *Work System Design: Taylor's scientific management, Gilbreths's contributions; Productivity – concepts and measurements; Method study, Micro-motion study, Principles of motion economy; Work measurement – time study, Work sampling, Standard data, PMTS; Ergonomics; Job evaluation and merit rating.* Facility Design: Facility location factors and evaluation of alternate locations; Types of plant layout and their evaluation; Computer aided layout design techniques; Assembly line balancing; Materials handling systems. *Operation Research: Linear programming – problem formulation, simplex method, duality and sensitivity analysis; Transportation and assignment models; Integer programming; Constrained and unconstrained nonlinear optimization; Markovian queuing models; Simulation – manufacturing applications.* Project management: Scheduling techniques – Gantt chart, CPM, PERT and GERT.	15	25	45 mins	**20-04-2020**

PI_P16	*Quality Management: Quality – concept and costs; Statistical quality control – process capability analysis, control charts for variables and attributes and acceptance sampling; Six sigma; Total quality management; Quality assurance and certification - ISO 9000, ISO14000.* *Reliability and Maintenance: Reliability, availability and maintainability; Distribution of failure and repair times; Determination of MTBF and MTTR, Reliability models; Determination of system reliability; Preventive and predictive maintenance and replacement, Total productive maintenance.* *Product Design and Development: Principles of product design, tolerance design; Quality and cost considerations; Product life cycle; Standardization, simplification, diversification; Value engineering and analysis; Concurrent engineering; Design for "X".*	15	25	45 mins	
PI_P17	**Verbal Ability:** English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	15	25	45 mins	
PI_P18	**Numarical Ability:** Numerical computation, numerical estimation, numerical reasoning and data interpretation.	15	25	45 mins	

Subject Wise Grand Tests - 1st Series

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
PI_P19	Engineering Mathematics	30	50	90 mins	20-04-2020
PI_P20	Thermodynamics	30	50	90 mins	
PI_P21	Engineering Mechanics & Strength of Materials	30	50	90 mins	
PI_P22	Fluid Mechanics & Heat Transfer	30	50	90 mins	
PI_P23	Theory of Machines and Vibrations & Machine Design	30	50	90 mins	
PI_P24	Production	30	50	90 mins	
PI_P25	Industrial Management and Operational Research	30	50	90 mins	
PI_P26	General Aptitude	30	50	90 mins	

Multi-Subject Wise Grand Tests

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
PI_P27	Engineering Mechanics & Strength of Materials	30	50	90 mins	20-04-2020
PI_P28	Fluid Mechanics, Heat Transfer & Thermodynamics	30	50	90 mins	
PI_P29	Theory of Machines and vibrations & Machine Design	30	50	90 mins	
PI_P30	Production	30	50	90 mins	
PI_P31	Industrial Management and Operational Research	30	50	90 mins	
PI_P32	Engineering Mathematics & General Aptitude	30	50	90 mins	

Full Length Mock GATE Tests

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
PI_P33	Full Length GATE Mock Test-1	65	100	180 mins	20-04-2020
PI_P34	Full Length GATE Mock Test-2	65	100	180 mins	
PI_P35	Full Length GATE Mock Test-3	65	100	180 mins	
PI_P36	Full Length GATE Mock Test-4	65	100	180 mins	
PI_P37	Full Length GATE Mock Test-5	65	100	180 mins	
PI_P38	Full Length GATE Mock Test-6	65	100	180 mins	
PI_P39	Full Length GATE Mock Test-7	65	100	180 mins	

PI_P40	Full Length GATE Mock Test-8	65	100	180 mins	
PI_P41	Full Length GATE Mock Test-9	65	100	180 mins	
PI_P42	Full Length GATE Mock Test-10	65	100	180 mins	
PI_P43	Full Length GATE Mock Test-11	65	100	180 mins	
PI_P44	Full Length GATE Mock Test-12	65	100	180 mins	