ACE
Engineering Academy
(Leading institute for ESE/GATE/PSUs)
Since 1995

GATE - 2019
Online Test Series

PRODUCTION & INDUSTRIAL ENGINEERING (PI)

No. of Tests : 52 + *Free* 20 Practice Tests of GATE - 2018 Online Test Series

	GATE - 19 Test Series	Practice Tests GATE - 18 Test Series
Topic wise Tests	18	-
Subject Wise / Multi Subject Grand Tests	22	8
Full Length Mock Tests	12	12

All tests will be available till GATE -2019 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.

Topic wise Tests

Each test carries 25 marks and 45 minutes duration

Test consists of 5 one mark questions and 10 two marks questions

Tests will be activated at 2:00 pm on scheduled day

Test No	Topic code	Topic	Date of Activation
PI-01	GEM-1 (Engineering Mathematics)	Linear Algebra, Calculus, Differential Equations	02-05-2018
PI-02	GEM-2 (Engineering Mathematics)	Complex Variables, Numerical Methods and Probability and Statistics.	
PI-03	GMC (Engineering Mechanics)	Applied Mechanics: Engineering mechanics – equivalent force systems, free body concepts, equations of equilibrium; trusses.	
PI-04	GHT (Heat Transfer)	Heat transfer – basic applicationsof conduction, convection and radiation.	
PI-05	GTM (Theory of Machines and Vibrations)	Analysis of planar mechanisms, cams and followers; governors and fly wheels.	11-05-2018
PI-06	GTH (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.	
PI-07	GSM – 1 (Strength of Materials)	Strength of materials – stress, strain and their relationship; failure theories, Mohr's circle(stress).	18-05-2018
PI-08	GSM – 2 (Strength of Materials)	Deflection of beams, bending and shear stress, Euler's theory of columns.	
PI-09	GFM (Fluid Mechanics)	Fluid mechanics – fluid statics, Bernoulli's equation, flow through pipes, equations of continuity and momentum, capillary action, contact angle and wetting.	
PI-10	GMD (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.	25-05-2018
PI-11	GPI – 1 (Production)	*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.	
PI-12	GPI – 2 (Production)	*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.	

Test No	Topic code	Topic	Date of Activation
PI-13	GPI – 3 (Production)	*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.	25-05-2018
PI-14	GIM – 1 (Industrial Management and Operational Research)	Engineering Economy and Costing: Elementary cost accounting and methods of depreciation; break-even analysis, techniques for evaluation of capital investments, financial statements, time-cost trade off, resource leveling. Production control: Forecasting techniques – causal and time series models, moving average, exponential smoothing, trend and seasonality; aggregate production planning; master production scheduling; MRP and MRP-II; routing, scheduling and priority dispatching; Push and pull production systems, concept of JIT manufacturing system; Logistics, distribution, and supply chain management; Inventory – functions, costs, classifications, deterministic inventory models, quantity discount; perpetual and periodic inventory control systems.	
PI-15	GIM – 2 (Industrial Management and Operational Research)	*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, merit rating, incentive schemes,and wage administration. *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; network flow models, constrained optimization and Lagrange multipliers; Markovian queuing models; dynamic programming; simulation – manufacturing applications. Project management – PERT and CPM.	01-06-2018
PI-16	GIM – 3 (Industrial Management and Operational Research)	*Quality management:* Quality – concept and costs; quality assurance; statistical quality control, acceptance sampling, zero defects, six sigma; total quality management; ISO 9000. 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 maintenance and replacement. *Product Design and Development:* Principles of good product design, tolerance design; quality and cost considerations; product life cycle; standardization, simplification, diversification, value engineering and analysis, concurrent engineering; comparison of production alternatives.	
PI-17	GGA-1 (General Aptitude)	English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	
PI-18	GGA-2 (General Aptitude)	Numerical computation, numerical estimation, numerical reasoning and data interpretation.	

Subject-wise Grand Tests 1ˢᵗ Series

Each test carries 50 marks and 90 minutes duration

Test consists of 10 one mark questions and 20 two marks questions

Test No	Subject Code	Name of the Subject	Date of Activation
PI-19	GEM	Engineering Mathematics	08-06-2018
PI-20	GTH	Thermodynamics	22-06-2018
PI-21	GMC & GSM	Engineering Mechanics & Strength of Materials	
PI-22	GFM & GHT	Fluid Mechanics & Heat Transfer	29-06-2018
PI-23	GTM & GMD	Theory of Machines and Vibrations & Machine Design	
PI-24	GPI	Production	06-07-2018
PI-25	GIM	Industrial Management and Operational Research	
PI-26	GGA	General Aptitude	

Full Length Mock GATE - 1ˢᵗ Series

As per GATE pattern

Each test carries 100 Marks and 3 Hours duration

Test No			Date of Activation
PI-27	Mock-1	Full Length GATE Mock Test-1	13-07-2018
PI-28	Mock-2	Full Length GATE Mock Test-2	20-07-2018
PI-29	Mock-3	Full Length GATE Mock Test-3	27-07-2018

Subject-wise Grand Tests 2ⁿᵈ Series

Each test carries 50 marks and 90 minutes duration

Test No	Subject Code	Name of the Subject	Date of Activation
PI-30	GEM	Engineering Mathematics	10-08-2018
PI-31	GTH	Thermodynamics	24-08-2018
PI-32	GMC & GSM	Engineering Mechanics & Strength of Materials	
PI-33	GFM & GHT	Fluid Mechanics & Heat Transfer	31-08-2018
PI-34	GTM & GMD	Theory of Machines and Vibrations & Machine Design	
PI-35	GPI	Production	
PI-36	GIM	Industrial Management and Operational Research	07-08-2018
PI-37	GGA	General Aptitude	

Full Length Mock GATE - 2nd Series (As per GATE pattern)

Test No			Date of Activation
PI-38	Mock-4	Full Length GATE Mock Test-4	13-09-2018
PI-39	Mock-5	Full Length GATE Mock Test-5	20-09-2018
PI-40	Mock-6	Full Length GATE Mock Test-6	27-09-2018

Multi-Subject wise Grand Tests
Each test carries 50 marks and 90 minutes duration

Test No	Subject Code	Name of the Subject	Date of Activation
PI-41	GMC & GSM	Engineering Mechanics & Strength of Materials	05-10-2018
PI-42	GFM, GHT & GTH	Fluid Mechanics, Heat Transfer & Thermodynamics	12-10-2018
PI-43	GTM & GMD	Theory of Machines and vibrations & Machine Design	
PI-44	GPI	Production	26-10-2018
PI-45	GIM	Industrial Management and Operational Research	
PI-46	GEM & GGA	Engineering Mathematics & General Aptitude	

Full Length Mock GATE - 3rd Series (As per GATE pattern)

Test No			Date of Activation
PI-47	Mock-7	Full Length GATE Mock Test-7	12-11-2018
PI-48	Mock-8	Full Length GATE Mock Test-8	19-11-2018
PI-49	Mock-9	Full Length GATE Mock Test-9	26-11-2018
PI-50	Mock-10	Full Length GATE Mock Test-10	11-01-2019
PI-51	Mock-11	Full Length GATE Mock Test-11	21-01-2019
PI-52	Mock-12	Full Length GATE Mock Test-12	30-01-2019

Free Practice Tests of GATE-2018 Online Test Series

Subject-wise Grand Tests

Each test carries 50 marks and 90 minutes duration

Test No	Subject Code	Name of the Subject	Date of Activation
PI-P1	GMC & GSM	Engineering Mechanics & Strength of Materials	
PI-P2	GTH	Thermodynamics	
PI-P3	GFM & GHT	Fluid Mechanics & Heat Transfer	
PI-P4	GTM & GMD	Theory of Machines and Vibrations & Machine Design	
PI-P5	GPI	Production	02-05-2018
PI-P6	GIM	Industrial Management and Operational Research	
PI-P7	GEM	Engineering Mathematics	
PI-P8	GGA	General Aptitude	

Full Length Mock GATE(As per GATE pattern)

Test No			Date of Activation
PI-P9	Mock-1	Full Length GATE Mock Test-1	
PI-P10	Mock-2	Full Length GATE Mock Test-2	
PI-P11	Mock-3	Full Length GATE Mock Test-3	
PI-P12	Mock-4	Full Length GATE Mock Test-4	
PI-P13	Mock-5	Full Length GATE Mock Test-5	
PI-P14	Mock-6	Full Length GATE Mock Test-6	
PI-P15	Mock-7	Full Length GATE Mock Test-7	25-05-2018
PI-P16	Mock-8	Full Length GATE Mock Test-8	
PI-P17	Mock-9	Full Length GATE Mock Test-9	
PI-P18	Mock-10	Full Length GATE Mock Test-10	
PI-P19	Mock-11	Full Length GATE Mock Test-11	
PI-P20	Mock-12	Full Length GATE Mock Test-12	