






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

GATE – 2020

Online Test Series

INSTRUMENTATION ENGINEERING (IN)

No. of Tests : 64 + **Free** 54 Practice Tests of GATE - 2019 Online Test Series

	GATE - 2020 Test Series	Practice Tests GATE - 2019 Test Series
 Topic wise Tests	22	22
 Subject Wise / Multi Subject Grand Tests	30	20
 Full Length Mock Tests	12	12

All tests will be available till GATE -2020 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
IN-01	GEM – 1 (Engineering Mathematics)	Linear Algebra, Calculus, Differential Equations.	02-05-2019
IN-02	GEM – 2 (Engineering Mathematics)	Analysis of Complex Variables, Probability and Statistics and Numerical Methods.	
IN-03	GCS – 1 (Control Systems)	Feedback principles, signal flow graphs, transient response, steady-state-errors, Routh criteria, root loci.	
IN-04	GCS – 2 (Control Systems)	Bode plot, phase and gain margins, Nyquist criteria, design of lead, lag and lead-lag compensators, state-space representation of systems; time-delay systems; mechanical, hydraulic and pneumatic system components, synchro pair, servo and stepper motors, servo valves; on-off, P, P-I, P-I-D, cascade, feed forward, and ratio controllers.	
IN-05	GSS – 1 (Signals and Systems)	Periodic, aperiodic and impulse signals; Fourier transform. transfer function, frequency response of first and second order linear time invariant systems, impulse response of systems; convolution, correlation.	08-05-2019
IN-06	GSS – 2 (Signals and Systems)	Laplace, and z-transforms; Discrete time system: impulse response, frequency response, pulse transfer function; DFT and FFT; basics of IIR and FIR filters.	
IN-07	GDE-1 (Digital Electronics)	Combinational logic circuits, minimization of Boolean functions.. Arithmetic circuits, comparators, Schmitt trigger, multi-vibrators. IC families: TTL and CMOS.	
IN-08	GDE-2 (Digital Electronics)	Sample-and-hold circuit, multiplexer, analog-to- digital (successive approximation, integrating, flash and sigma-delta) and digital-to- analog converters (weighted R, R-2R ladder and current steering logic). Characteristics of ADC and DAC (resolution, quantization, significant bits, conversion/settling time); basics of number systems. sequential circuits, flip- flops, basics of number systems, , shift registers, timers and counters;	
IN-09	GDE-3 (Digital Electronics)	8-bit microprocessor and microcontroller: applications, memory and input-output interfacing; basics of data acquisition systems.	15-05-2019
IN-10	GEC -1 (Electrical Circuits)	Voltage and current sources: independent, dependent, ideal and practical; v-i relationships of resistor, inductor, mutual inductor and capacitor; transient analysis of RLC circuits with dc excitation. Kirchoff's laws, mesh and nodal analysis, superposition, Thevenin, Norton, maximum power transfer and reciprocity theorems.	
IN-11	GEC-2 (Electrical Circuits)	Peak-, average- and rms values of ac quantities; apparent-, active- and reactive powers; phasor analysis, impedance and admittance; series and parallel resonance, locus diagrams, realization of basic filters with R, L and C elements. One-port and two-port networks, driving point impedance and admittance, open-, and short circuit parameters.	
IN-12	GSI-1 (Sensors & Industrial Instrumentation)	Resistive-, capacitive-, inductive-, piezoelectric-, Hall effect sensors and associated signal conditioning circuits; transducers for industrial instrumentation: displacement (linear and angular), velocity, acceleration, force, torque, vibration, shock, pressure (including low pressure).	

Test No	Topic code	Topic	Date of Activation
IN-13	GSI-2 (Sensors & Industrial)	Flow (differential pressure, variable area, electromagnetic, ultrasonic, turbine and open channel flow meters)	15-05-2019
IN-14	GSI-3 (Sensors & Industrial Instrumentation)	Temperature (thermocouple, bolometer, RTD (3/4 wire), thermistor, pyrometer and semiconductor); liquid level, pH, conductivity and viscosity measurement.	
IN-15	GAE-1 (Analog Electronics)	Characteristics and applications of diode, Zener diode, BJT and MOSFET; small signal analysis of transistor circuits, feedback amplifiers.	23-05-2019
IN-16	GAE-2 (Analog Electronics)	Characteristics of operational amplifiers; applications of op amps: difference amplifier, adder, subtractor, integrator, differentiator, instrumentation amplifier, precision rectifier, active filters and other circuits. Oscillators, signal generators, voltage controlled oscillators and phase locked loop.	
IN-17	GCO-1 (Communication & Optical instrumentation)	Amplitude- and frequency modulation and demodulation; Shannon's sampling theorem, pulse code modulation; frequency and time division multiplexing, amplitude-, phase-, frequency-, pulse shift keying for digital modulation.	
IN-18	GCO-2 (Communication & Optical instrumentation)	Optical sources and detectors: LED, laser, photo-diode, light dependent resistor and their characteristics; interferometer: applications in metrology; basics of fiber optic sensing.	
IN-19	GME-1 (Measurements)	SI units, systematic and random errors in measurement, expression of uncertainty - accuracy and precision index, propagation of errors. PMMC, MI and dynamometer type instruments; dc potentiometer; bridges for measurement of R, L and C, Q-meter.	29-05-2019
IN-20	GME-2 (Measurements)	Measurement of voltage, current and power in single and three phase circuits; ac and dc current probes; true rms meters, voltage and current scaling, instrument transformers, timer/counter, time, phase and frequency measurements, digital voltmeter, digital multimeter; oscilloscope, shielding and grounding.	
IN-21	GGA-1 (General Aptitude)	English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	
IN-22	GGA-2 (General Aptitude)	Numerical computation, numerical estimation, numerical reasoning and data interpretation.	

<p style="text-align: center;">Subject-wise Grand Tests 1st Series</p> <p style="text-align: center;">Each test carries 50 marks and 90 minutes duration</p> <p style="text-align: center;">Test consists of 10 one mark questions and 20 two marks questions</p>			
Test No	Subject Code	Name of the Subject	Date of Activation
IN-23	GEM	Engineering Mathematics	05-06-2019
IN-24	GCS	Control Systems	
IN-25	GSS	Signals and Systems	12-06-2019
IN-26	GDE	Digital Electronics	
IN-27	GEC	Electrical Circuits	19-06-2019
IN-28	GSI	Sensors & Industrial Instrumentation	
IN-29	GAE	Analog Electronics	27-06-2019
IN-30	GCO	Communication & Optical instrumentation	
IN-31	GME	Measurements	03-07-2019
IN-32	GGA	General Aptitude	

Full Length Mock GATE - 1st Series

As per GATE pattern

Each test carries 100 Marks and 3 Hours duration

Test No	Mock Codes		Date of Activation
IN-33	Mock-1	Full Length GATE Mock Test-1	11-07-2019
IN-34	Mock-2	Full Length GATE Mock Test-2	18-07-2019
IN-35	Mock-3	Full Length GATE Mock Test-3	25-07-2019

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
IN-36	GEM	Engineering Mathematics	07-08-2019
IN-37	GCS	Control Systems	
IN-38	GSS	Signals and Systems	14-08-2019
IN-39	GDE	Digital Electronics	
IN-40	GEC	Electrical Circuits	21-08-2019
IN-41	GSI	Sensors & Industrial Instrumentation	
IN-42	GAE	Analog Electronics	28-08-2019
IN-43	GCO	Communication & Optical instrumentation	
IN-44	GME	Measurements	04-09-2019
IN-45	GGA	General Aptitude	

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

Test No	Mock Codes		Date of Activation
IN-46	Mock-4	Full Length GATE Mock Test-4	12-09-2019
IN-47	Mock-5	Full Length GATE Mock Test-5	19-09-2019
IN-48	Mock-6	Full Length GATE Mock Test-6	26-09-2019

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
IN-49	GEC & GSI	Electrical Circuits & Sensors and Industrial Instrumentation	02-10-2019
IN-50	GCS & GSS	Control Systems & Signals and Systems	
IN-51	GME & GAC	Measurements & Analog Electronics	16-10-2019
IN-52	GSI & GDC	Sensors and Industrial Instrumentation & Digital Electronics	
IN-53	GEM & GGA	Engineering Mathematics & General Aptitude	23-10-2019
IN-54	GCS & GSS	Control Systems, Signals and Systems, Digital Electronics & Analog Electronics	
IN-55	GDC & GAC	Analog Electronics, Signals and Systems, Communication and Optical Instrumentation & Measurements	30-10-2019
IN-56	GCO & GEC	Communication & Optical Instrumentation & Measurements	
IN-57	GCO & GME	Communication and Optical Instrumentation, Electrical circuits & Digital Electronics	01-11-2019
IN-58	GEM & GGA	Engineering Mathematics & General Aptitude	

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

Test No	Mock Codes		Date of Activation
IN-59	Mock-7	Full Length GATE Mock Test-7	07-11-2019
IN-60	Mock-8	Full Length GATE Mock Test-8	14-11-2019
IN-61	Mock-9	Full Length GATE Mock Test-9	21-11-2019
IN-62	Mock-10	Full Length GATE Mock Test-10	09-01-2020
IN-63	Mock-11	Full Length GATE Mock Test-11	19-01-2020
IN-64	Mock-12	Full Length GATE Mock Test-12	25-01-2020

Free Practice Tests of GATE-2019 Online Test Series

Topic wise Tests

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Test No	Topic code	Topic	Date of Activation
IN-P01	GEM – 1 (Engineering Mathematics)	Linear Algebra, Calculus, Differential Equations.	02-05-2019
IN-P02	GEM – 2 (Engineering Mathematics)	Analysis of Complex Variables, Probability and Statistics and Numerical Methods.	
IN-P03	GCS – 1 (Control Systems)	Feedback principles, signal flow graphs, transient response, steady-state-errors, Routh criteria, root loci.	
IN-P04	GCS – 2 (Control Systems)	Bode plot, phase and gain margins, Nyquist criteria, design of lead, lag and lead-lag compensators, state-space representation of systems; time-delay systems; mechanical, hydraulic and pneumatic system components, synchro pair, servo and stepper motors, servo valves; on-off, P, P-I, P-I-D, cascade, feed forward, and ratio controllers.	
IN-P05	GSS – 1 (Signals and Systems)	Periodic, aperiodic and impulse signals; Fourier transform. transfer function, frequency response of first and second order linear time invariant systems, impulse response of systems; convolution, correlation.	
IN-P06	GSS – 2 (Signals and Systems)	Laplace, and z-transforms; Discrete time system: impulse response, frequency response, pulse transfer function; DFT and FFT; basics of IIR and FIR filters.	
IN-P07	GDE-1 (Digital Electronics)	Combinational logic circuits, minimization of Boolean functions.. Arithmetic circuits, comparators, Schmitt trigger, multi-vibrators. IC families: TTL and CMOS.	
IN-P08	GDE-2 (Digital Electronics)	Sample-and-hold circuit, multiplexer, analog-to- digital (successive approximation, integrating, flash and sigma-delta) and digital-to- analog converters (weighted R, R-2R ladder and current steering logic). Characteristics of ADC and DAC (resolution, quantization, significant bits, conversion/settling time); basics of number systems. sequential circuits, flip- flops, basics of number systems, , shift registers, timers and counters;	
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IN-P11	GEC-2 (Electrical Circuits)	Peak-, average- and rms values of ac quantities; apparent-, active- and reactive powers; phasor analysis, impedance and admittance; series and parallel resonance, locus diagrams, realization of basic filters with R, L and C elements. One-port and two-port networks, driving point impedance and admittance, open-, and short circuit parameters.	
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IN-P26	GDE	Digital Electronics	
IN-P27	GEC	Electrical Circuits	
IN-P28	GSI	Sensors & Industrial Instrumentation	
IN-P29	GAE	Analog Electronics	
IN-P30	GCO	Communication & Optical instrumentation	
IN-P31	GME	Measurements	
IN-P32	GGA	General Aptitude	

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IN-P33	GEC & GSI	Electrical Circuits & Sensors and Industrial Instrumentation	02-05-2019
IN-P34	GCS & GSS	Control Systems & Signals and Systems	
IN-P35	GME & GAC	Measurements & Analog Electronics	
IN-P36	GSI & GDC	Sensors and Industrial Instrumentation & Digital Electronics	
IN-P37	GEM & GGA	Engineering Mathematics & General Aptitude	
IN-P38	GCS & GSS	Control Systems, Signals and Systems, Digital Electronics & Analog Electronics	
IN-P39	GDC & GAC	Analog Electronics, Signals and Systems, Communication and Optical Instrumentation & Measurements	
IN-P40	GCO & GEC	Communication & Optical Instrumentation & Measurements	
IN-P41	GCO & GME	Communication and Optical Instrumentation, Electrical circuits & Digital Electronics	
IN-P42	GEM & GGA	Engineering Mathematics & General Aptitude	

Full Length Mock GATE(As per GATE pattern)

Test No	Mock Codes	Name of the Subject	Date of Activation
IN-P43	Mock-1	Full Length GATE Mock Test-1	25-05-2019
IN-P44	Mock-2	Full Length GATE Mock Test-2	
IN-P45	Mock-3	Full Length GATE Mock Test-3	
IN-P46	Mock-4	Full Length GATE Mock Test-4	
IN-P47	Mock-5	Full Length GATE Mock Test-5	
IN-P48	Mock-6	Full Length GATE Mock Test-6	
IN-P49	Mock-7	Full Length GATE Mock Test-7	
IN-P50	Mock-8	Full Length GATE Mock Test-8	
IN-P51	Mock-9	Full Length GATE Mock Test-9	
IN-P52	Mock-10	Full Length GATE Mock Test-10	
IN-P53	Mock-11	Full Length GATE Mock Test-11	
IN-P54	Mock-12	Full Length GATE Mock Test-12	