



ACE

Engineering Academy

GATE-2021 Online Test Series

Instrumentation Engineering - Schedule

No. of Test : 64 (22 Topic wise Tests + 30 Grand Tests + 12 Full Length Mock Tests)
+ **Free** 54 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: Analysis of Complex Variables, Probability and Statistics and Numerical Methods.	15	25	45 mins	
Test-03	Control Systems-1: Feedback principles, signal flow graphs, transient response, steady-state-errors, Routh criteria, root loci.	15	25	45 mins	
Test-04	Control Systems-2: 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.	15	25	45 mins	
Test-05	Signals and Systems-1: 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.	15	25	45 mins	10-06-2020
Test-06	Signals and Systems-2: Laplace, and z-transforms; Discrete time system: impulse response, frequency response, pulse transfer function; DFT and FFT; basics of IIR and FIR filters.	15	25	45 mins	
Test-07	Digital Electronics-1: Combinational logic circuits, minimization of Boolean functions.. Arithmetic circuits, comparators, Schmitt trigger, multi-vibrators. IC families: TTL and CMOS.	15	25	45 mins	
Test-08	Digital Electronics-2: 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;	15	25	45 mins	
Test-09	Digital Electronics-3: 8-bit microprocessor and microcontroller: applications, memory and input-output interfacing; basics of data acquisition systems.	15	25	45 mins	17-06-2020
Test-10	Electrical Circuits-1: 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.	15	25	45 mins	
Test-11	Electrical Circuits-2: 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.	15	25	45 mins	
Test-12	Sensors and Industrial Instrumentation-1: 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).	15	25	45 mins	
Test-13	Sensors and Industrial Instrumentation-2: Flow (differential pressure, variable area, electromagnetic, ultrasonic, turbine and open channel flow meters)	15	25	45 mins	
Test-14	Sensors and Industrial Instrumentation-3: Temperature (thermocouple, bolometer, RTD (3/4 wire), thermistor, pyrometer and semiconductor); liquid level, pH, conductivity and viscosity measurement.	15	25	45 mins	

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-15	Analog Electronics-1: Characteristics and applications of diode, Zener diode, BJT and MOSFET; small signal analysis of transistor circuits, feedback amplifiers.	15	25	45 mins	24-06-2020
Test-16	Analog Electronics-2: 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.	15	25	45 mins	
Test-17	Communication and Optical instrumentation-1: 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.	15	25	45 mins	
Test-18	Communication and Optical instrumentation-2: Optical sources and detectors: LED, laser, photo-diode, light dependent resistor and their characteristics; interferometer: applications in metrology; basics of fiber optic sensing.	15	25	45 mins	
Test-19	Measurements-1: 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.	15	25	45 mins	01-07-2020
Test-20	Measurements-2: 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.	15	25	45 mins	
Test-21	Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	15	25	45 mins	
Test-22	Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation.	15	25	45 mins	

Subject Wise Grand Tests - 1 st Series					
Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-23	Engineering Mathematics	30	50	90 mins	15-07-2020
Test-24	Control Systems	30	50	90 mins	
Test-25	Signals and Systems	30	50	90 mins	22-07-2020
Test-26	Digital Electronics	30	50	90 mins	
Test-27	Electrical Circuits	30	50	90 mins	29-07-2020
Test-28	Sensors & Industrial Instrumentation	30	50	90 mins	
Test-29	Analog Electronics	30	50	90 mins	05-08-2020
Test-30	Communication & Optical instrumentation	30	50	90 mins	
Test-31	Measurements	30	50	90 mins	11-08-2020
Test-32	General Aptitude	30	50	90 mins	

Full Length Mock GATE Test - 1 st Series (As per GATE pattern)					
Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-33	Full Length GATE Mock Test-1	65	100	180 mins	19-08-2020
Test-34	Full Length GATE Mock Test-2	65	100	180 mins	26-08-2020
Test-35	Full Length GATE Mock Test-3	65	100	180 mins	02-09-2020

Subject Wise Grand Tests - 2nd Series

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-36	Engineering Mathematics	30	50	90 mins	09-09-2020
Test-37	Control Systems	30	50	90 mins	
Test-38	Signals and Systems	30	50	90 mins	16-09-2020
Test-39	Digital Electronics	30	50	90 mins	
Test-40	Electrical Circuits	30	50	90 mins	23-09-2020
Test-41	Sensors & Industrial Instrumentation	30	50	90 mins	
Test-42	Analog Electronics	30	50	90 mins	30-09-2020
Test-43	Communication & Optical instrumentation	30	50	90 mins	
Test-44	Measurements	30	50	90 mins	07-10-2020
Test-45	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-46	Full Length GATE Mock Test-4	65	100	180 mins	14-10-2020
Test-47	Full Length GATE Mock Test-5	65	100	180 mins	21-10-2020
Test-48	Full Length GATE Mock Test-6	65	100	180 mins	28-10-2020

Multi-Subject Wise Grand Tests

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
Test-49	Electrical Circuits & Sensors and Industrial Instrumentation	30	50	90 mins	04-11-2020
Test-50	Control Systems & Signals and Systems	30	50	90 mins	
Test-51	Measurements & Analog Electronics	30	50	90 mins	11-11-2020
Test-52	Sensors and Industrial Instrumentation & Digital Electronics	30	50	90 mins	
Test-53	Engineering Mathematics & General Aptitude	30	50	90 mins	18-11-2020
Test-54	Control Systems, Signals and Systems, Digital Electronics & Analog Electronics	30	50	90 mins	
Test-55	Analog Electronics , Signals and Systems, Communication and Optical Instrumentation & Measurements	30	50	90 mins	25-11-2020
Test-56	Communication & Optical Instrumentation & Measurements	30	50	90 mins	
Test-57	Communication and Optical Instrumentation, Electrical circuits & Digital Electronics	30	50	90 mins	28-11-2020
Test-58	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-59	Full Length GATE Mock Test-7	65	100	180 mins	02-12-2020
Test-60	Full Length GATE Mock Test-8	65	100	180 mins	09-12-2020
Test-61	Full Length GATE Mock Test-9	65	100	180 mins	04-01-2021
Test-62	Full Length GATE Mock Test-10	65	100	180 mins	11-01-2021
Test-63	Full Length GATE Mock Test-11	65	100	180 mins	18-01-2021
Test-64	Full Length GATE Mock Test-12	65	100	180 mins	25-01-2021

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
IN_P01	Engineering Mathematics-1: Linear Algebra, Calculus, Differential Equations.	15	25	45 mins	20-04-2020
IN_P02	Engineering Mathematics-2: Analysis of Complex Variables, Probability and Statistics and Numerical Methods.	15	25	45 mins	
IN_P03	Control Systems-1: Feedback principles, signal flow graphs, transient response, steady-state-errors, Routh criteria, root loci.	15	25	45 mins	
IN_P04	Control Systems-2: 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.	15	25	45 mins	
IN_P05	Signals and Systems-1: 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.	15	25	45 mins	
IN_P06	Signals and Systems-2: Laplace, and z-transforms; Discrete time system: impulse response, frequency response, pulse transfer function; DFT and FFT; basics of IIR and FIR filters.	15	25	45 mins	
IN_P07	Digital Electronics-1: Combinational logic circuits, minimization of Boolean functions.. Arithmetic circuits, comparators, Schmitt trigger, multi-vibrators. IC families: TTL and CMOS.	15	25	45 mins	
IN_P08	Digital Electronics-2: 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;	15	25	45 mins	
IN_P09	Digital Electronics-3: 8-bit microprocessor and microcontroller: applications, memory and input-output interfacing; basics of data acquisition systems.	15	25	45 mins	
IN_P10	Electrical Circuits-1: 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.	15	25	45 mins	
IN_P11	Electrical Circuits-2: 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.	15	25	45 mins	
IN_P12	Sensors and Industrial Instrumentation-1: 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).	15	25	45 mins	
IN_P13	Sensors and Industrial Instrumentation-2: Flow (differential pressure, variable area, electromagnetic, ultrasonic, turbine and open channel flow meters)	15	25	45 mins	
IN_P14	Sensors and Industrial Instrumentation-3: Temperature (thermocouple, bolometer, RTD (3/4 wire), thermistor, pyrometer and semiconductor); liquid level, pH, conductivity and viscosity measurement.	15	25	45 mins	
IN_P15	Analog Electronics-1: Characteristics and applications of diode, Zener diode, BJT and MOSFET; small signal analysis of transistor circuits, feedback amplifiers.	15	25	45 mins	
IN_P16	Analog Electronics-2: 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.	15	25	45 mins	
IN_P17	Communication and Optical instrumentation-1: 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.	15	25	45 mins	

Test No	Name of the Topic	No. of Questions	Max Marks	Duration	Date of Activation
IN_P18	Communication and Optical instrumentation-2: Optical sources and detectors: LED, laser, photo-diode, light dependent resistor and their characteristics; interferometer: applications in metrology; basics of fiber optic sensing.	15	25	45 mins	20-04-2020
IN_P19	Measurements-1: 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.	15	25	45 mins	
IN_P20	Measurements-2: 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.	15	25	45 mins	
IN_P21	Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	15	25	45 mins	
IN_P22	Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation.	15	25	45 mins	

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IN_P24	Control Systems	30	50	90 mins	
IN_P25	Signals and Systems	30	50	90 mins	
IN_P26	Digital Electronics	30	50	90 mins	
IN_P27	Electrical Circuits	30	50	90 mins	
IN_P28	Sensors & Industrial Instrumentation	30	50	90 mins	
IN_P29	Analog Electronics	30	50	90 mins	
IN_P30	Communication & Optical instrumentation	30	50	90 mins	
IN_P31	Measurements	30	50	90 mins	
IN_P32	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
IN_P33	Electrical Circuits & Sensors and Industrial Instrumentation	30	50	90 mins	20-04-2020
IN_P34	Control Systems & Signals and Systems	30	50	90 mins	
IN_P35	Measurements & Analog Electronics	30	50	90 mins	
IN_P36	Sensors and Industrial Instrumentation & Digital Electronics	30	50	90 mins	
IN_P37	Engineering Mathematics & General Aptitude	30	50	90 mins	
IN_P38	Control Systems, Signals and Systems, Digital Electronics & Analog Electronics	30	50	90 mins	
IN_P39	Analog Electronics , Signals and Systems, Communication and Optical Instrumentation & Measurements	30	50	90 mins	
IN_P40	Communication & Optical Instrumentation & Measurements	30	50	90 mins	
IN_P41	Communication and Optical Instrumentation, Electrical circuits & Digital Electronics	30	50	90 mins	
IN_P42	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
IN_P43	Full Length GATE Mock Test-1	65	100	180 mins	20-04-2020
IN_P44	Full Length GATE Mock Test-2	65	100	180 mins	
IN_P45	Full Length GATE Mock Test-3	65	100	180 mins	
IN_P46	Full Length GATE Mock Test-4	65	100	180 mins	
IN_P47	Full Length GATE Mock Test-5	65	100	180 mins	
IN_P48	Full Length GATE Mock Test-6	65	100	180 mins	
IN_P49	Full Length GATE Mock Test-7	65	100	180 mins	
IN_P50	Full Length GATE Mock Test-8	65	100	180 mins	
IN_P51	Full Length GATE Mock Test-9	65	100	180 mins	
IN_P52	Full Length GATE Mock Test-10	65	100	180 mins	
IN_P53	Full Length GATE Mock Test-11	65	100	180 mins	
IN_P54	Full Length GATE Mock Test-12	65	100	180 mins	