GATE 2020 Online Test Series
Electronics & Communication Engineering

Topicwise Tests

Tests	Test Activation Date	Test Closing Date	Test Syllabus	No. of Ques.	Marks	Timing
TWT-1	15/03/2019	20/02/2020	**Networks-1**: Network solution methods: nodal and mesh analysis, Wye-Delta transformation. Network theorems: superposition, Thevenin and Norton's, maximum power transfer. Steady state sinusoidal analysis using phasors.	17	25	45 min
TWT-2			**Networks-2**: Frequency domain analysis of RLC circuits. Time domain analysis of simple linear circuits. Solution of network equations using Laplace transform. Linear 2-port network parameters: driving point and transfer functions.	17	25	45 min
TWT-3			**Control Systems-1**: Basic control system components, feedback principle, transfer function, block diagram representation, signal flow graph. Transient and steady-state analysis of LTI systems. Routh-Hurwitz; Root-locus plots.	17	25	45 min
TWT-4			**Control Systems-2**: Frequency response, Nyquist stability criteria and Bode plot. Lag, lead and lag-lead compensation, PID controllers. State variable model and solution of state equation of LTI systems.	17	25	45 min
TWT-5			**Electronic Devices-1**: Energy bands in intrinsic and extrinsic silicon, Carrier transport: diffusion current, drift current, mobility and resistivity. Generation and recombination of carriers. Poisson and continuity equations. P-N junction, Zener diode.	17	25	45 min
TWT-6			**Electronic Devices-2**: BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell. Integrated circuit fabrication process: oxidation, diffusion, ion implantation, photolithography and twin-tub CMOS process.	17	25	45 min
TWT-7			**Analog Circuits-1**: Small signal equivalent circuits of diodes. Simple diode circuits: clipping, clamping and rectifiers. Biasing, bias stability of BJTs and MOSFETs.	17	25	45 min
TWT-8			**Analog Circuits-2** : Small signal equivalent circuits of BJTs and MOSFETs, single-stage BJT and MOSFET amplifiers, mid-frequency small signal analysis. Frequency response of BJT and MOSFET amplifiers. Multi-stage, differential, feedback and power amplifiers.	17	25	45 min
TWT-9			**Engineering mathematics-1**: Linear Algebra, Calculus, Vector Analysis, Probability and Statistics.	17	25	45 min
TWT-10			**Engineering mathematics-2**: Differential Equations, Complex Analysis, Numerical Methods.	17	25	45 min
TWT-11			**General Aptitude-1**: Numerical Ability: Numerical computation, numerical estimation, numerical reasoning and data interpretation.	17	25	45 min
TWT-12			**General Aptitude-2:** Verbal Ability: English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.	17	25	45 min
TWT-13			**Analog Circuits-3**: Operational amplifiers: Simple op-amp circuits, active filters. Sinusoidal oscillators: criterion for oscillation, single-transistor and op-amp configurations. Function generators, wave-shaping circuits and 555 timers. Voltage reference circuits; Power supplies: ripple removal and regulation.	17	25	45 min
TWT-14			**Microprocessors**: Semiconductor memories: ROM, SRAM, DRAM; 8-bit microprocessor (8085): architecture, programming, memory and I/O interfacing.	17	25	45 min
TWT-15			**Digital Circuits-1**: Number systems; Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders.	17	25	45 min
TWT-16			**Digital Circuits-2:** Programmable logic devices. Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines. Data converters: sample and hold circuits, ADCs and DACs.	17	25	45 min

TWT-17	15/04/2019	20/02/2020	**Signals and Systems-1:** Continuous-time signals: Fourier series and Fourier transform representations, sampling theorem and applications. Continuous LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structures, frequency response, group delay, phase delay.	17	25	45 min
TWT-18			**Signals and Systems-2**: Discrete-time signals: discrete-time Fourier transform (DTFT), DFT, FFT, Z-transform, interpolation of discrete-time signals. Discrete LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structures, digital filter design techniques.	17	25	45 min
TWT-19			**Communications-1**: Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits for analog communications.	17	25	45 min
TWT-20			**Communications-2**: Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI systems. Information theory: entropy, mutual information and channel capacity theorem.	17	25	45 min
TWT-21			**Communications-3:** Digital communications: PCM, DPCM, digital modulation schemes, amplitude, phase and frequency shift keying (ASK, PSK, FSK), QAM, MAP and ML decoding, matched filter receiver, calculation of bandwidth, SNR and BER for digital modulation; Fundamentals of error correction, Hamming codes; Timing and frequency synchronization, inter-symbol interference and its mitigation; Basics of TDMA, FDMA and CDMA.	17	25	45 min
TWT-22			**Electromagnetics-1**: Electrostatics; Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector.	17	25	45 min
TWT-23			**Electromagnetics-2**: Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth. Waveguides: modes, boundary conditions, cut-off frequencies, dispersion relations.	17	25	45 min
TWT-24			**Electromagnetics-3**: Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart. Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays. Basics of radar; Light propagation in optical fibers.	17	25	45 min
Single Subject Tests						
SST-1	15/05/2019	20/02/2020	Networks	33	50	90 min
SST-2			Control Systems	33	50	90 min
SST-3			Electronic Devices	33	50	90 min
SST-4			Analog Circuits	33	50	90 min
SST-5			Engineering Mathematics	33	50	90 min
SST-6			General Aptitude	33	50	90 min
SST-7	15/06/2019	20/02/2020	Signals & Systems	33	50	90 min
SST-8			Analog Communication Systems	33	50	90 min
SST-9			Digital Communication Systems	33	50	90 min
SST-10			Digital Circuits	33	50	90 min
SST-11			Electromagnetics	33	50	90 min
SST-12			Microprocessors	33	50	90 min
Multiple Subject Tests						
MST-1	15/07/2019	20/02/2020	Networks + Control Systems	33	50	90 min
MST-2			Electronic Devices + Analog Circuits	33	50	90 min
MST-3			Digital Circuits + Microprocessors	33	50	90 min
MST-4			Communications	33	50	90 min
MST-5			Electromagnetics + Signals & Systems	33	50	90 min
MST-6			Engineering Mathematics + General Aptitude	33	50	90 min
Full Syllabus Tests						
FST-1	15/08/2019	20/02/2020	Full Syllabus Test-1	65	100	180 min
FST-2			Full Syllabus Test-2	65	100	180 min

FST-3	15/09/2019	20/02/2020	Full Syllabus Test-3	65	100	180 min
FST-4			Full Syllabus Test-4	65	100	180 min
FST-5			Full Syllabus Test-5	65	100	180 min
FST-6			Full Syllabus Test-6	65	100	180 min
FST-7			Full Syllabus Test-7	65	100	180 min
FST-8			Full Syllabus Test-8	65	100	180 min
Candidate has to upload GATE-2020 Admit Card to access below mentioned tests						
GMT-1	**04/01/2020**	**20/02/2020**	GATE Mock Test 1	65	100	180 min
GMT-2			GATE Mock Test 2	65	100	180 min
GMT-3			GATE Mock Test 3	65	100	180 min
GMT-4			GATE Mock Test 4	65	100	180 min