



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




**GATE - 2018**



**ONLINE TEST SERIES**

**ELECTRONICS & COMMUNICATION ENGINEERING (EC)**

**—≡ No. of Tests : 62 ≡—**

	Chapter / Topic wise Tests	20
	Subject Wise / Multi Subject Grand Tests	30
	Full Length Mock Tests	12

### **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.

## Division of Subjects into Various Topics

Subject & Code	Topic Code	Topic/Chapter
<b>Networks</b>  <b>Subject code: GNW</b>	GNW-1	Network solution methods: nodal and mesh analysis; Network theorems: superposition, Thevenin and Norton's, maximum power transfer; Wye-Delta transformation
	GNW -2	Steady state sinusoidal analysis using phasors; Time domain analysis of simple linear circuits; Solution of network equations using Laplace transform; Frequency domain analysis of RLC circuits; Linear 2-port network parameters: driving point and transfer functions; State equations for networks.
<b>Signals &amp; Systems</b>  <b>Subject code: GSS</b>	GSS-1	Introduction to signals, LTI systems: definition and properties, causality, stability, impulse response, convolution. Fourier series and Fourier transform representations. sampling theorem and applications. Frequency response, group delay and phase delay.
	GSS-2	Laplace transform, discrete-time Fourier transform (DTFT), DFT, FFT, Z-transform, interpolation of discrete-time signals, poles and zeros, parallel and cascade structure, digital filter design techniques.
<b>Control Systems</b>  <b>Subject code: GCS</b>	GCS-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 stability criteria, root-locus plot.
	GCS-2	Frequency response; Nyquist stability criteria; Bode Plot, Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems.
<b>Digital Circuits</b>  <b>Subject code: GDC</b>	GDC-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 and PLAs; Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines.
	GDC-2	Data converters: sample and hold circuits, ADCs and DACs; Semiconductor memories: ROM, SRAM, DRAM, 8-bit microprocessor (8085): architecture, programming, memory and I/O interfacing.

<b>Subject &amp; Code</b>	<b>Topic Code</b>	<b>Topic/Chapter</b>
<b>EDC &amp; VLSI</b>  <b>Subject code: GEDC</b>	GEDC-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, BJT.
	GEDC-2	MOS capacitor, MOSFET, LED, photo diode and solar cell; Integrated circuit fabrication process: oxidation, diffusion, ion implantation, photolithography and twin-tub CMOS process.
<b>Analog Circuits</b>  <b>Subject code: GAC</b>	GAC-1	Small signal equivalent circuits of diodes, BJTs and MOSFETs; Simple diode circuits: clipping, clamping and rectifiers; Single-stage BJT and MOSFET amplifiers: biasing, bias stability, mid-frequency small signal analysis and frequency response; BJT and MOSFET amplifiers: multi-stage.
	GAC-2	Differential, feedback, power and operational; 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.
<b>Communications</b>  <b>Subject code: GCMS</b>	GCMS-1	Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits for analog communications, 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.
	GCMS-2	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.

Subject & Code	Topic Code	Topic/Chapter
<b>Electromagnetics</b>  <b>Subject code: GEMT</b>	GEMT-1	Electrostatics; Maxwell's equations: differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector; Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth.
	GEMT-2	Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart; Waveguides: modes, boundary conditions, cut-off frequencies, dispersion relations; Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays; Basics of radar; Light propagation in optical fibers.
<b>Engineering Mathematics</b>  <b>Subject code: GEM</b>	GEM-1	<p>Linear Algebra: Vector space, basis, linear dependence and independence, matrix algebra, eigen values and eigen vectors, rank, solution of linear equations – existence and uniqueness.</p> <p>Calculus: Mean value theorems, theorems of integral calculus, evaluation of definite and improper integrals, partial derivatives, maxima and minima, multiple integrals, line, surface and volume integrals, Taylor series.</p> <p>Vector Analysis: Vectors in plane and space, vector operations, gradient, divergence and curl, Gauss's, Green's and Stoke's theorems.</p> <p>Differential Equations: First order equations (linear and nonlinear), higher order linear differential equations, Cauchy's and Euler's equations, methods of solution using variation of parameters, complementary function and particular integral, partial differential equations, variable separable method, initial and boundary value problems.</p>
	GEM-2	<p>Complex Analysis: Analytic functions, Cauchy's integral theorem, Cauchy's integral formula; Taylor's and Laurent's series, residue theorem.</p> <p>Numerical Methods: Solution of nonlinear equations, single and multi-step methods for differential equations, convergence criteria.</p> <p>Probability and Statistics: Mean, median, mode and standard deviation; combinatorial probability, probability distribution functions - binomial, Poisson, exponential and normal; Joint and conditional probability; Correlation and regression analysis.</p>
<b>General Aptitude</b>  <b>Subject code: GGA</b>	GVA	English grammar, sentence completion, verbal analogies, word groups, instructions, critical reasoning and verbal deduction.
	GNA	Numerical computation, numerical estimation, numerical reasoning and data interpretation.

## Topic/Chapter-wise Tests

Each test carries 25 marks and 45 minutes duration

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

*Commences from 10<sup>th</sup> June, 2017 onwards, the detailed test schedule is as follows:*

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

Test No	Topic code	Date of Activation
EC -01	GNW – 1	10.06.2017
EC -02	GNW – 2	13.06.2017
EC -03	GSS – 1	16.06.2017
EC -04	GSS – 2	19.06.2017
EC -05	GCS – 1	22.06.2017
EC -06	GCS – 2	25.06.2017
EC -07	GDC – 1	28.06.2017
EC -08	GDC – 2	01.07.2017
EC -09	GEDC – 1	04.07.2017
EC - 10	GEDC – 2	07.07.2017
EC -11	GAC – 1	11.07.2017
EC -12	GAC – 2	14.07.2017
EC -13	GCMS – 1	17.07.2017
EC -14	GCMS – 2	20.07.2017
EC -15	GEMT – 1	23.07.2017
EC -16	GEMT – 2	26.07.2017
EC - 17	GEM – 1	29.07.2017
EC -18	GEM – 2	01.08.2017
EC -19	GVA	04.08.2017
EC -20	GNA	07.08.2017

## Subject-wise Grand Tests- 1<sup>st</sup> Series

Each test carries 50 marks and 90 minutes duration.

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

*Commences from 10<sup>th</sup> August, 2017 onwards, the detailed test schedule is as follows:*

Test No	Subject code	Date of Activation
EC-21	GNW	10.08.2017
EC-22	GSS	13.08.2017
EC-23	GCS	17.08.2017
EC-24	GDC	20.08.2017
EC-25	GEDC	23.08.2017
EC-26	GAC	27.08.2017
EC-27	GCMS	30.08.2017
EC-28	GEMT	02.09.2017
EC-29	GEM	06.09.2017
EC-30	GGA	09.09.2017

## Full Length Mock GATE -1<sup>st</sup> Series

As per GATE Pattern

Each test carries 100 marks and 3 hours duration.

*Commences from 13<sup>th</sup> September, 2017 onwards, the detailed test schedule is as follows:*

Test No	Mock GATE code	Date of Activation
EC-31	Mock – 1	13.09.2017
EC-32	Mock – 2	16.09.2017
EC-33	Mock – 3	19.09.2017

## Subject-wise Grand Tests- 2<sup>nd</sup> Series

Each test carries 50 marks and 90 minutes duration.

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

*Commences from 22<sup>nd</sup> September, 2017 onwards, the detailed test schedule is as follows:*

Test No	Subject code	Date of Activation
EC-34	GNW	22.09.2017
EC-35	GSS	25.09.2017
EC-36	GCS	02.10.2017
EC-37	GDC	05.10.2017
EC-38	GEDC	08.10.2017
EC-39	GAC	11.10.2017
EC-40	GCMS	14.10.2017
EC-41	GEMT	17.10.2017
EC-42	GEM	21.10.2017
EC-43	GGA	24.10.2017

## Full Length Mock GATE -2<sup>nd</sup> Series

As per GATE Pattern

Each test carries 100 marks and 3 hours duration.

*Commences from 29<sup>th</sup> October, 2017 onwards, the detailed test schedule is as follows:*

Test No	Mock GATE code	Date of Activation
EC-44	Mock – 4	29.10.2017
EC-45	Mock – 5	04.11.2017
EC-46	Mock – 6	11.11.2017

## Multi Subject Grand Tests

Each test carries 50 marks and 90 minutes duration.

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

Commences from 18<sup>th</sup> November , 2017 onwards, the detailed test schedule is as follows:

Test No	Subjects code	Date of Activation
EC-47	GNW, GEMT	18.11.2017
EC-48	GCS,GSS	21.11.2017
EC-49	GEDC,GAC	24.11.2017
EC-50	GCMS,GDC	27.11.2017
EC-51	GEM,GGA	30.11.2017
EC-52	GSS,GCS	03.12.2017
EC-53	GDC, GAC	06.12.2017
EC-54	GEDC,GNW	09.12.2017
EC-55	GCMS,GEMT	12.12.2017
EC-56	GEM,GGA	15.12.2017

## Full Length Mock GATE -3<sup>rd</sup> Series

As per GATE Pattern

Each test carries 100 marks and 3 hours duration.

Commences from 17<sup>th</sup> December, 2017 onwards, the detailed test schedule is as follows:

Test No	Mock GATE code	Date of Activation
EC-57	Mock-7	17.12.2017
EC-58	Mock – 8	24.12.2017
EC-59	Mock – 9	31.12.2017
EC-60	Mock – 10	08.01.2018
EC-61	Mock – 11	16.01.2018
EC-62	Mock – 12	24.01.2018

NOTE: The Dates of above MOCK GATE Exams may Change according to the GATE – 2018 Exam schedule.