

Engineering Service Exam (E.S.E)-2015 in E&T

Indian Engineering Service exam for Electronics&Communication is conducted by UPSC every year in last week of month of June for post of class-1 officer in various departments like Indian Railway, Indian telecom, Defense, Wireless planning, Ordinance, power-engineering & Inspection services etc. All posts will be as class-1 officer. Most of the seats in Electronics&communication will be in Indian Railway& Indian Telecom service only. I.E.S is the best option for an electronics &communication engineer in government sector.

1. Minimum Eligibility criterion for this exam:

(a) Education qualification:

If you have done your B.TECH/B.E in

1. Any branch which has word Electronics eg. Electronics Telecomm, Electronics-communication & Electronics engineering.
2. Computer science/Information technology.
3. Electrical engineering.
4. Any branch related to instrumentation engineering.
5. M.Sc in Electronics&equivalent

Note: If you belongs to any circuit branch (Electronics, computer, IT, Instrumentation & Electrical) you are eligible for IES in Electronics & Tele Communication. There is no need of minimum percentage in your degree. Computer science is not included in engineering service exams but generally computer science graduates prefer ECE because many subjects of Electronics they have already studied in B.Tech. Instrumentation graduates also prefer IES by electronics&Communication only. Past result shows that many Computer&Instrumentaion graduates have cleared IES exam in E&T only.

(b) Age criterion for IES- 2015:

A candidate for this examination must have attained the age of 21 years and must not have attained the age of 30 years on the **1st January 2015** i.e. he/she must have been born not earlier than **2nd January 1985** and not later than **1st January 1994**. There are no number of attempts in Engineering service exam

2. No of posts in IES exam:

Generally no of seats vary from year to year and it is in the range of 125-150. Out of which most of the posts belong to Indian Railway Service of Signal Engineering (IRSSE)& Indian Telecom Service (I.T.S). Reservation is as per Government of India rule.

3. Pattern of Engineering service Exam :

(a) Number of papers:

There are 5 papers out of which 3 are objective types and 2 are conventional (Subjective) papers. Every paper carries 200 marks. These exams are conducted for 3 days. Result of written exam is declared and then successful candidates are called for interview which also carries 200 marks. So final result is declared out of 1200 marks.

(b) Negative marking:

1/3 mark will be deducted as penalty for every wrong question in objective paper. There is no negative marking in conventional paper. So in objective paper accuracy is more important.

(c) Standard of questions:

Questions asked in all 5 papers require depth and conceptual study of subject. For solving all those questions you must have basic concept and good practice of objective questions. In objective generally questions are

trick based and one is required various tricks for solving those questions. For conventional paper generally questions are based upon derivations and numerical questions. In conventional numerical question answer is important.

4. Minimum cut-off marks for selection in Engineering service exam:

After written exam UPSC short list students on the basis of performance in total marks in all 3 objective papers. Conventional paper will be evaluated only of successful students in objective paper. But interview call will be on the basis of performance in total 5 papers.

(a) Minimum cut-off marks for evaluating conventional paper in IES exam:

Exam year	General	O.B.C	S.C	S.T
2009	245	220	192	158
2011	228	208	176	141
2013	268	256	215	201

(b) Minimum cut-off marks for Interview call in IES exam:

Exam year	General	O.B.C	S.C	S.T
2008	388	346	306	297
2009	440	401	348	296
2010	410	360	312	288
2011	432	390	339	304
2012	465	436	387	381
2013	482	445	390	368

(c) Minimum cut-off marks for final selection in IES exam:

Exam year	General	O.B.C	S.C	S.T
2008	526	500	438	460
2009	579	547	467	430
2010	554	514	450	420
2011	576	541	451	446
2012	607	585	511	512
2013	636	589	519	513

Syllabus for IES in Electronics & Communication paper:

PAPER-1:

1. Materials and Components: Structure and properties of Electrical Engineering materials; Conductors, Semiconductors and Insulators, magnetic, Ferroelectric, Piezoelectric, Ceramic, Optical and Superconducting materials. Passive components and characteristics Resistors, Capacitors and Inductors; Ferrites, Quartz crystal Ceramic resonators, Electromagnetic and Electromechanical components.

2. Physical Electronics, Electron Devices and ICs: Electrons and holes in semiconductors, Carrier Statistics, Mechanism of current flow in a semiconductor, Hall effect; Junction theory; Different types of diodes and their characteristics; Bipolar Junction transistor; Field effect transistors; Power switching devices like SCRs, GTOs, power MOSFETS; Basics of ICs - bipolar, MOS and CMOS types; basic of Opto Electronics.

3. Signals and Systems: Classification of signals and systems: System modelling in terms of differential and difference equations; State variable representation; Fourier series; Fourier transforms and their application to system analysis; Laplace transforms and their application to system analysis; Convolution and superposition integrals and their applications; Z-transforms and their applications to the analysis and characterisation of discrete time systems; Random signals and probability, Correlation functions; Spectral density; Response of linear system to random inputs.

4. Network theory: Network analysis techniques; Network theorems, transient response, steady state sinusoidal response; Network graphs and their applications in network analysis; Tellegen's theorem. Two port networks; Z, Y, h and transmission parameters. Combination of two ports, analysis of common two ports. Network functions: parts of network functions, obtaining a network function from a given part. Transmission criteria: delay and rise time, Elmore's and other definitions effect of cascading. Elements of network synthesis.

5. Electromagnetic Theory: Analysis of electrostatic and magnetostatic fields; Laplace's and Poisson's equations; Boundary value problems and their solutions; Maxwell's equations; application to wave propagation in bounded and unbounded media; Transmission lines : basic theory, standing waves, matching applications, microstrip lines; Basics of wave guides and resonators; Elements of antenna theory.

6. Electronic Measurements and instrumentation: Basic concepts, standards and error analysis; Measurements of basic electrical quantities and parameters; Electronic measuring instruments and their principles of working: analog and digital, comparison, characteristics, application. Transducers; Electronic measurements of non electrical quantities like temperature, pressure, humidity etc; basics of telemetry for industrial use.

PAPER-2:

1. Analog Electronic Circuits: Transistor biasing and stabilization. Small signal analysis. Power amplifiers. Frequency response. Wide banding techniques. Feedback amplifiers. Tuned amplifiers. Oscillators. Rectifiers and power supplies. Op Amp, PLL, other linear integrated circuits and applications. Pulse shaping circuits and waveform generators.

2. Digital Electronic Circuits: Transistor as a switching element; Boolean algebra, simplification of Boolean functions, Karnaguh map and applications; IC Logic gates and their characteristics; IC logic families : DTL, TTL, ECL, NMOS, PMOS and CMOS gates and their comparison; Combinational logic Circuits; Half adder, Full adder; Digital comparator; Multiplexer Demulti-plexer; ROM an their applications. Flip flops. R-S, J-K, D and T flip-flops; Different types of counters and registers Waveform generators. A/D and D/A converters. Semiconductor memories.

3. Control Systems: Transient and steady state response of control systems; Effect of feedback on stability and sensitivity; Root locus techniques; Frequency response analysis. Concepts of gain and phase margins: Constant-M and Constant-N Nichol's Chart; Approximation of transient response from Constant-N Nichol's Chart; Approximation of transient response from closed loop frequency response; Design of Control Systems, Compensators; Industrial controllers.

4. Communication Systems: Basic information theory; Modulation and detection in analogue and digital systems; Sampling and data reconstructions; Quantization & coding; Time division and frequency division multiplexing; Equalization; Optical Communication: in free space & fibre optic; Propagation of signals at HF, VHF, UHF and microwave frequency; Satellite Communication.

5. Microwave Engineering: Microwave Tubes and solid state devices, Microwave generation and amplifiers, Waveguides and other Microwave Components and Circuits, Micro strip circuits, Microwave Antennas, Microwave Measurements, Masers, lasers; Microwave propagation. Microwave Communication Systems terrestrial and Satellite based.

6. Computer engineering: Number Systems. Data representation; Programming; Elements of a high level programming language PASCAL/C; Use of basic data structures; Fundamentals of computer architecture; Processor design; Control unit design; Memory organisation, I/o System Organisation. Microprocessors: Architecture and instruction set of Microprocessors 8085 and 8086, Assembly language Programming. Microprocessor based system design: typical examples. Personal computers and their typical uses.

Strategy for Indian Engineering Service Exam:

IES is considered one of the toughest and prestigious exams conducted by UPSC. Success ratio is very less and its syllabus is too vast. To qualify this exam one requires proper strategy other than good knowledge and concept. You require tricks for solving the objective papers and presentation skills for writing conventional papers. One must know what to study and what not to study.

(a) Pattern for General Ability Paper

This is very crucial paper because generally engineers are weak in general study and don't score good marks in this paper. This paper contains 60 questions from GS & 60 questions from English

(i) Strategy for English section:

1. 20 questions from Vocabulary
2. 10 questions from Grammar (error)
3. 10+20 questions from comprehension & sentence ordering.

For English vocabulary try to learn high frequency 3500 words of Panacea English book. Most of the vocabulary in IES paper comes from this book only. For error part you can follow panacea English book so that you can have the concept of error finding. For sentence ordering and passage no need of much practice, in this section if you are attentive in exam you can solve all these questions very easily. For practice you can follow Panacea English book. For learning high frequency words we are arranging classes by experts who will help you to memorise these words by some audio & video visual effects and will also give many techniques so that student can remember these words very easily.

(ii) Strategy for General study section:

General study becomes very difficult for an engineer as they don't study Geography & Biology which are major part of General study. For Geography you need a mentor because it is very conceptual subject. For history and geography you can follow Panacea books and NCERT books which are the best available material in market. For GS classes are taken by a person who has qualified IAS exam. He is the best available faculty for GS in India for IES exam. Most of the questions in IES exam come directly from his class notes. He has experience of 12 years teaching in field of IES exam. For current affair section extra classes are taken and we also provide study material for that section. For current affairs we are conducting classes 15 days before exams so that every current issue can be discussed in great detail.

(b) Strategy for Electronics & Communication objective papers:

For solving objective papers student must have very good concept in electronics & communication engineering. The best formula for cracking objective papers in IES is to solve last 25 years objective papers of IES/GATE Electronics & Communication. It is not possible to solve questions by a single book. So try to build concept and solve objective questions. Most of the questions in objective papers of electronics &

communication come from our class notes only. Our classes are taken by IES&GATE toppers and they teach in class what they studied for themselves. It's very difficult to get correct solution of last 25 years questions in market. We solve all last 25 years questions in our class-room with full explanation. We provide exact solution of all last 25 years questions. Other than these questions we also provide probable 1000 extra questions on each topic. We also conduct topic test every week during class room program. Other than this we also conduct test series 2 month before the IES exam.

(c) Strategy for Electronics & Communication conventional papers:

For solving conventional papers student must have very good concept in electronics & communication engineering. The best formula for cracking subjective papers in IES is to solve last 25 years conventional papers of IES Electronics & Communication papers. It is not possible to solve questions by a single book. So try to build concept and solve subjective questions. Most of the questions & derivations in subjective papers of electronics & communication come from our class notes only. Our classes are taken by IES & GATE toppers and they teach in class what they studied for themselves. It's very difficult to get correct solution of last 25 years questions in market. We solve all last 25 years questions only in our class-room with full explanation. We provide exact solution of all last 25 years questions. We also provide probable questions on every topic for conventional papers.

Note: In conventional paper accuracy is very important and students must concentrate on answer.

Graduate Aptitude Test Examination (GATE)-2015

Graduate Aptitude test in electronics&communication is conducted every year by IIT for admission in M.Tech, MS and PhD in various IITs,NITs, government colleges and various private colleges. After doing M.Tech you will have specialisation in your stream eg. After doing M.Tech in VLSI you will be specialized in that field only and you will have better opportunities because very less specialized people are there. Value of your resume will also be increased many fold.

1. Branches for admission in M.Tech in Electronics&Communication:

- (i) Integrated Electronics and circuit
- (ii) Communication Engineering
- (iii) Control&automation
- (iv) Telecommunication technology and management
- (v) R.F and Microwave engineering
- (vi) Fibre optics and light wave engineering
- (vii) Visual information and embedded system
- (viii) Wireless communication
- (ix) Measurement and Instrumentation
- (x) Power electronics

2. Minimum Eligibility criterion for this exam:

(a) Education qualification:

If you have done your B.TECH/BE in

1. Any branch which has word Electronics e.g. Electronics &Telecomm
Electronics-communication &Electronics engineering.
2. Computer science/Information technology.
3. Electrical engineering.
4. Any branch related to instrumentation engineering.
5. M.Sc in Electronics&equivalent

(b) Age criterion for GATE-2015: There is no age criterion for GATE exam.

3. *Pattern of GATE Exam :*

(a) *Number of papers:*

There is only 3 hour paper which contains 65 questions. Total marks for this Paper are 100. Out of 100 marks 85 marks are for technical subjects and 15 marks for Non technical subjects. Non technical subjects include quantities aptitude and general English.

(b) *Negative marking:*

1/3 mark will be deducted as penalty for every wrong 1 marks question in objective paper. 2/3 marks will be deducted as penalty for every 2 marks wrong question.

(c) *Standard of questions:*

Questions asked in this paper require depth and conceptual study of subject. For solving all those questions you must have basic concept and good practice of objective questions. In objective generally Questions are trick based and required various tricks for solving those questions.

(d) *Minimum cut-off marks for GATE score :*

Exam year	General	O.B.C	S.C	Students appeared
2010	25	22.67	16.67	-----
2011	26.33	23.67	17.67	137853
2012	25	22.50	16.67	176944
2013	25	22.50	16.67	256135
2014	25.56	23.01	17.04	216367

(e) *Marks for good percentile:*

For getting top-100 rank marks are generally in range of 60 plus. But if your marks are in range of 60 you can get admission of your choice. For getting M.Tech admission in very good colleges 50 plus Marks are required.

Syllabus for GATE in Electronics&Communication paper:

Syllabus for Engineering Mathematics:

- Linear Algebra:** Matrix Algebra, Systems of linear equations, Eigen values and Eigen vectors.
- Calculus:** Mean value theorems, Theorems of integral calculus, Evaluation of definite and improper integrals, Partial Derivatives, Maxima and minima, Multiple integrals, Fourier series. Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Greens theorems.
Differential equations: First order equation (linear and nonlinear), Higher order linear differential equations with constant coefficients, Method of variation of parameters, Cauchys and Eulers equations, Initial and boundary value problems, Partial Differential Equations and variable separable method.
- Complex variables:** Analytic functions, Cauchys integral theorem and integral formula, Taylors and Laurent series, Residue theorem, solution integrals.
- Probability and Statistics:** Sampling theorems, Conditional probability, Mean, median, mode and standard deviation, Random variables, Discrete and continuous distributions, Poisson, Normal and Binomial distribution, Correlation and regression analysis.
- Numerical Methods:** Solutions of non-linear algebraic equations, single and multi-step methods for differential equations.

6. Transform Theory: Fourier transform, Laplace transform, Z-transform.

Syllabus for Electronics & Communication:

Networks: Network graphs: matrices associated with graphs; incidence, fundamental cut set and fundamental circuit matrices. Solution methods: nodal and mesh analysis. Network theorems: superposition, Thevenin and Nortons maximum power transfer, Wye-Delta transformation. Steady state sinusoidal analysis using phasors. Linear constant coefficient differential equations; time domain analysis of simple RLC circuits, Solution of network equations using Laplace transform: frequency domain analysis of RLC circuits. 2-port network parameters: driving point and transfer functions. State equations for networks.

Electronic Devices: Energy bands in silicon, intrinsic and extrinsic silicon. Carrier transport in silicon: diffusion current, drift current, mobility, and resistivity. Generation and recombination of carriers. p-n junction diode, Zener diode, tunnel diode, BJT, JFET, MOS capacitor, MOSFET, LED, p-I-n and avalanche photo diode, Basics of LASERs. Device technology: integrated circuits fabrication process, oxidation, diffusion, ion implantation, photolithography, n-tub, p-tub and twin-tub CMOS process.

Analog Circuits: Small Signal Equivalent circuits of diodes, BJTs, MOSFETs and analog CMOS. Simple diode circuits, clipping, clamping, rectifier. Biasing and bias stability of transistor and FET amplifiers. Amplifiers: single- and multi-stage, differential and operational, feedback, and power. Frequency response of amplifiers. Simple op-amp circuits. Filters. Sinusoidal oscillators; criterion for oscillation; single-transistor and op-amp configurations. Function generators and wave-shaping circuits, 555 Timers. Power supplies.

Digital circuits: Boolean algebra, minimization of Boolean functions; logic gates; digital IC families (DTL, TTL, ECL, MOS, CMOS). Combinatorial circuits: arithmetic circuits, code converters, multiplexers, decoders, PROMs and PLAs. Sequential circuits: latches and flip-flops, counters and shift-registers. Sample and hold circuits, ADCs, DACs. Semiconductor memories. Microprocessor (8085): architecture, programming, memory and I/O interfacing.

Signals & Systems: Definitions and properties of Laplace transform, continuous-time and discrete-time Fourier series, continuous-time and discrete-time Fourier Transform, DFT and FFT, z-transform. Sampling theorem. Linear Time-Invariant (LTI) Systems: definitions and properties; causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay. Signal transmission through LTI systems.

Control-systems: Basic control system components; block diagrammatic description, reduction of block diagrams. Open loop and closed loop (feedback) systems and stability analysis of these systems. Signal flow graphs and their use in determining transfer functions of systems; transient and steady state analysis of LTI control systems and frequency response. Tools and techniques for LTI control system analysis: root loci, Routh-Hurwitz criterion, Bode and Nyquist plots. Control system compensators: elements of lead and lag compensation, elements of Proportional-Integral-Derivative (PID) control. State variable representation and solution of state equation of LTI control systems.

Communications: Random signals and noise: probability, random variables, probability density function, autocorrelation, power spectral density. Analog communication systems: amplitude and angle modulation and demodulation systems, spectral analysis of these operations, super heterodyne receivers; elements of hardware, realizations of analog communication systems; signal-to-noise ratio (SNR) calculations for amplitude modulation (AM) and frequency modulation (FM) for low noise conditions. Fundamentals of information theory and channel capacity theorem. Digital communication systems: pulse code modulation (PCM), differential pulse code modulation (DPCM), digital modulation schemes: amplitude, phase and frequency shift keying schemes (ASK, PSK, FSK), matched filter receivers, bandwidth consideration and probability of error calculations for these schemes. Basics of TDMA, FDMA and CDMA and GSM.

Electromagnetic: Elements of vector calculus: divergence and curl; Gauss and Stokes theorems, Maxwell's equations: differential and integral forms. Wave equation, Poynting vector. Plane waves: propagation through various media; reflection and refraction; phase and group velocity; skin depth. Transmission lines: characteristic impedance; impedance transformation; Smith chart; impedance matching; S parameters, pulse excitation. Waveguides: modes in rectangular waveguides; boundary conditions; cut-off frequencies; dispersion relations. Basics of propagation in dielectric waveguide and optical fibers. Basics of Antennas: Dipole antennas; radiation pattern; antenna gain.

Strategy for GATE Exam:

GATE exam requires depth knowledge of subject. For cracking GATE exam one require clear concepts in subject. Questions asked are numerical based and very less theoretical questions are asked. Generally concepts are repeated in GATE exam so if you want to crack GATE exam you must solve last 25 years GATE questions with proper understanding. We at panacea are teaching special tricks for solving objective questions for GATE exam. Classes are taken by GATE toppers and last 25 years GATE solutions are given with full explanation. Other than this we provide 1000 additional questions on every topic. Other than topic tests 10 Full tests for GATE exam are also conducted. PANACEA GATE file is specially designed for GATE which includes 200 advance questions on every topic. For mathematics and Non technical portion same strategy is followed. For Mathematics class is taken by Maths expert while for Non tech&English portion experts are IIM qualified professionals. Counseling for M.Tech admission is also provided.

Public Sector Units (PSUs) for Electronics&Communication:

PSU	Min % marks			Upper-age limit			Selection/Exam pattern
	Gen	OBC	SC/ST	Gen	OBC	SC/ST	
BSNL	-	-	-	30	33	35	100 Tech+20 Non tech(3 hr)
MTNL	60	60	55	30	33	35	100 Tech+70 Non tech (2 hr)
DRDO	60	-	-	28	31	33	100 Tech +50 Non tech (2:30 hr)
ECIL	60	60	50	25	28	30	100 Tech(2hr)
NTPC	65	65	55	27	30	32	50 Tech+ 35 Non tech(2:00 hr)
BHEL	60	60	55	33	36	38	120 Tech +120 Non Tech(2:30 hr)
DMRC	70	70	70	28	31	33	45 Tech + 50 Non Tech(2:30 hr)
ONGC	65	65	60	30	33	35	82 Tech+ 42 Non tech(3hr)
BARC	60	60	-	26	29	31	100 Tech(2 hr)
UPPCL	60	60	50	-	-	-	120 Tech(2hr)
P.Bharati	-	-	-	-	-	-	175 Tech + 25 Non tech(2hr)
HAL	65	65	55	-	-	-	120 Tech + 40 Non tech (2:30 hr)
ISRO	65	65	60	-	-	-	80 Tech (1:30 hr)
GAIL	60	-	-	26	29	31	66 Tech + 34 Non tech(1:30 hr)
SAIL	65	60	60	28	31	33	100 Tech + 150 Non tech (2:30 hr)
BPCL	60	60	55	-	-	-	60 Tech +60 Non tech (2:30 hr)
IOCL	65	65	60	28	31	33	Basis on GATE score
HPCL	-	-	-	25	28	30	50 Tech + 120 Non tech(2:30 hr)
NALCO	65	60	-	30	33	35	60 Tech+60 Non tech(2:30 hr)
IFFCO	-	-	-	30	-	-	-
UPCL	60	60	-	35	-	-	120 Tech+ 50 Non tech(2:30 hr)
NFL	60	60	-	27	27	32	90 Tech +80 Non tech (2:30 hr)
SJVNL	-	-	-	30	-	-	120 Tech +30 Non tech(2:30 hr)
RRB	-	-	-	30	33	35	150 Tech + Non tech(2:00 hr)
PDIL	60	60	55	25	-	-	100 Tech+ 50 Non tech(2:30 hr)
Vizag	60	60	50	27	30	32	70 Tech +100 Non tech (2:30 hr)

Syllabus for PSU exams

Syllabus for various PSU exams is same as that of IES&GATE exam. So if you are preparing for IES&GATE exams then PSU syllabus will be covered automatically.

In general most of the questions in PSU exams are from last 25 years papers of IES/GATE exams.

Strategy for PSU exams:

In most of the PSUs questions asked are from last 25 years GATE&IES exams. If you have clear concept and have done all last 25 years questions of IES&GATE It is very easy to clear all these exams. For non technical portion generally questions come from quanta, reasoning and English. We at panacea are giving 1000 questions on every topic especially designed for PSU exams. Before every PSU exam mock tests are also conducted and assistance for PSU-interview is also provided.

List of reference books for Electronics&Communication:

General study:

1. Panacea book for history and polity
2. Panacea book for geography and life science
3. Panacea assignment book for 1200 questions on G.S
4. Panacea book for current affairs and General Knowledge
5. N.C.E.R.T book for Geography, history, life science and polity.
6. Polity book by D.D. Bashu.
7. Current affair from chronicle magazine
8. The Hindu News paper.

Non technical subjects:

1. Panacea book for Engineering mathematics theory and assignment
2. Panacea book for General aptitude theory and assignment
3. Panacea book for English

Material science & Component:

1. Panacea theory book for material science
2. Panacea assignment book for material science
3. Material science&engineering by V.Raghavan
4. Electrical material by C.S. Indulkar
5. Solid state physics by Pillai
6. Electrical material by S.P.Seth&Deccar
7. Solid-State Electronics by Streetman
8. Integrated Electronics by Milliman&Helkias

Electronics Device& circuit

1. Panacea theory book for Electronics&device circuit
2. Panacea assignment book for Electronics&device circuit
3. Solid-State Electronics by Streetman
4. Integrated Electronics by Milliman&Helkias
5. Micro-Electronics Circuit by Sedra-Smith
6. Electronics-Principal by Malvino

Electronics & Instrumentation:

1. Panacea theory book for Electronics&Instrumentation
2. Panacea assignment book for Electronics&Instrumentation
3. Electrical and Electronics Measurement by A.K.Sahni.
4. Electronics Measurement by Cooper
5. Electronics Measurement by Kalsi

Electromagnetic Theory:

1. Panacea theory book for Electro Magnetic Theory
2. Panacea assignment book for Electro Magnetic Theory
3. Elements of Electromagnetic by N.O.Sadiku
4. Electromagnetic Theory by K.D.Prasad
5. Electromagnetic waves and Radiation by J.D.Kraus
6. Electromagnetic by Haytt.
7. Electromagnetic Waves and Radiation by Jordan&Balman

Signal System and Random variable:

1. Panacea theory book for Signal system
2. Panacea assignment book for signal system
3. Signal System by Openheim&Willsky
4. Signal& System by M.J.Roberts
5. Problems from Schaum-Series
6. Random Variable from Peebles
7. Random Variable topic from B.P.Lathi

Network Theory:

1. Panacea theory book for Network theory
2. Panacea assignment book for Network theory
3. Circuit-Theory by A.Chakrabarti
4. Circuit-Theory by Soni-Gupta
5. Network Analysis by Valkanberg
5. Schaum-Series Problems

Analog Electronics:

1. Panacea theory book for Analog circuit
2. Panacea assignment book for Analog circuit
3. Electronics-Device &Circuit Theory by Boylsted
4. Linear Integrated Electronics by D.R.chaudhary
5. Op-Amp & Linear I.C. by Gayakwad
6. Pulse, Digital & Switching by Milliman & Taub

Digital Electronics:

1. Panacea theory book for Digital circuit
2. Panacea assignment book for digital circuit
3. Digital Logic& Computer design by Moris-Mano
4. Digital Integrated Electronics by Taub &Schilling
5. Digital Fundamentals by Flyod
6. Digital Principles by Malvino&Leach
7. Modern Digital Electronics by R.P.Jain

Control System:

1. Panacea theory book for Control circuit
2. Panacea assignment book for Control circuit
3. Modern Control Engineering by K.Ogata
4. Control System by B.C.Kuo
5. Control System Engineering by Nagrath&Gopal
6. Linear Control System by B.S.Manke
7. Problems in Control System by A.K.Jairath

Communication Theory:

1. Panacea theory book for Control circuit
2. Panacea assignment book for Control circuit
3. Principle of Communication by Taub&Schilling
4. Electronics Communication by Roddy&Coolen
5. Modern Digital&Analog Comm. by B.P.Lathi
6. Comm. System by Simon-Haykins
7. Electronics Communication by Kennedy
8. Senior for Optical Fiber
9. Gulati for TV
10. DC agrawal for satellite

Microwave Engineering:

1. Panacea theory book for micro wave
2. Panacea assignment book for micro wave
3. Electronics&communication by Kennedy
4. Microwave by Liao
5. Microwave by Kulkarni

Microprocessor and Computer Architecture:

1. Panacea theory book for microprocessor
2. Panacea assignment book for microprocessor
3. 8085 Microprocessor by R.A.Gaonkar
4. Microprocessor Interfacing by Douglas V.Hall
5. Microcomputer System 8086 by Liu&Gibson
6. Computer architecture by Moris meno
7. Book in C by Balaguru swamy

Note: PANACEA GATE file and PANACES IES file is also given before IES&GATE Exam

How to solve objective problems by short cut methods:

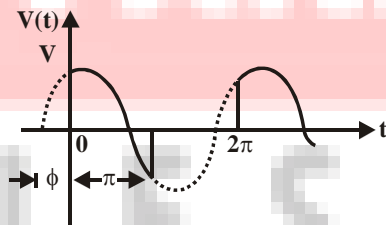
PANACEA IES/GATE Institute is famous for telling shortcut methods for big objective problems. Large problems can be solved in 1-2 line by these short cut methods. Thousands of short cut methods will be discussed in classes under the guidance of **Yogesh Agrawal (IES Rank-03&GATE topper in ECE with 14 yrs teaching exp)**. Few simple examples are given here.

Q. 1. The Fourier transform of $e^{-\pi t^2}$ is $e^{-\pi f^2}$ then the Fourier transform of $e^{-\alpha t^2}$ is

- (A) $\left(\frac{1}{\alpha}\right) \cdot e^{-\alpha f^2}$ (B) $\sqrt{\frac{\pi}{\alpha}} e^{-\frac{\pi^2 f^2}{\alpha}}$ (C) $\frac{1}{\sqrt{\pi\alpha}} e^{-\alpha\pi^2 f^2}$ (D) $\sqrt{\pi\alpha} e^{-\frac{f^2}{\pi^2\alpha}}$

Sol: In conventional method this problem will be solved by use of time scaling property of Fourier transform and will take lot of time. Now short cut method is just put $\alpha = \pi$ in expression $e^{-\alpha t^2}$ and put $\alpha = \pi$ in all 4 options and correct answer will become (B) because in option B for $\alpha = \pi$ answer is $e^{-\pi f^2}$ which is F.T of $e^{-\pi t^2}$ so here answer (B) will be correct answer.

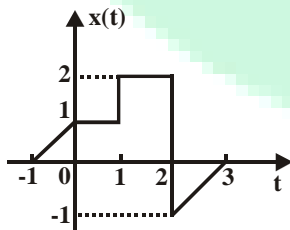
Q.2. The average value of the periodic function V (t) of the given figure is:



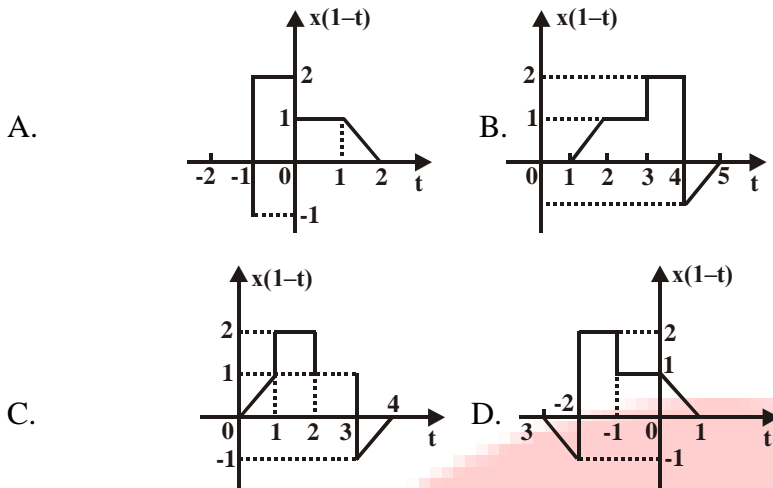
- (A) $\frac{V}{\pi} \cos \phi$ (B) $\frac{V}{\pi} \sin \phi$ (C) $\frac{2V}{\pi} \cos \phi$ (D) $\frac{V}{\pi}$

Sol: In convention method this question one has to apply formula of average value and will be solved by Integrating the expression. This process is too lengthy and will involve lot of mathematical calculations. Now short cut method is just put $\phi = 0$ which means this figure will become like HWR and average value must be $\frac{V}{\pi}$ so either option (A) or (D) will be correct answer. But (D) can't be correct answer because answer must have ϕ and i.e. why option (A) will be the best answer.

Q.3. If a plot of signal x(t) is as shown in the given figure 1.

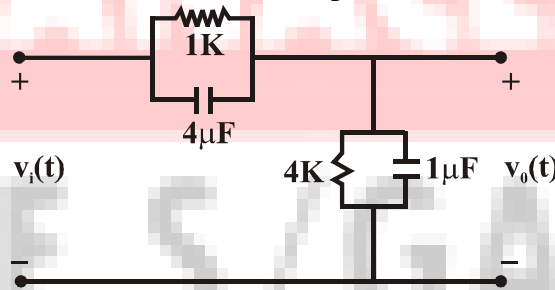


Then the plot of the signal $x(1 - t)$ will be :



Sol: Basic method is shifting and scaling method of signal transformation for that one has to draw waveform and then correct answer will be calculated. Short cut is put $t=0$ in $x(t)$ so $x(0)$ will be equal to 1 now put $t=1$ in all 4 answers so it must have equal to 1 value. Now put $t=2$ in $x(t)$ and its value will be 2 Which must have value at $t=-1$ for $x(1-t)$ so option (A) will be correct answer.

Q.4. In the figure shown below, assume that all the capacitors are initially uncharged. If $V_i(t) = 10u(t)$ volts, $V_o(t)$ is given by :

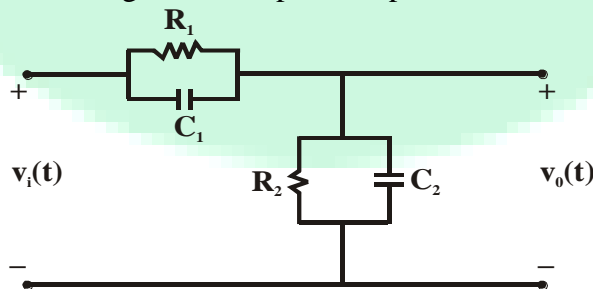


- (A) $8e^{-0.004t}$ Volts (B) $8(1 - e^{-0.004t})$ volts (C) $8u(t)$ volts (D) 8 volts

Sol: Basic method is to solve by calculation of transfer function and then take inverse Laplace transform This is very lengthy process and will consume lot of time. Short cut method is in these type of networks if Condition is $R_1C_1 = R_2C_2$ then it will behave like compensated attenuator and here output will be simply

attenuated version of input and answer will be: $V_o(t) = \frac{R_2}{R_1 + R_2} V_i(t) = \frac{4}{4+1} \times 10u(t) = 0.8u(t)$

Q.5. For the compensated attenuator of figure, the impulse response under the condition $R_1C_1=R_2C_2$ is:

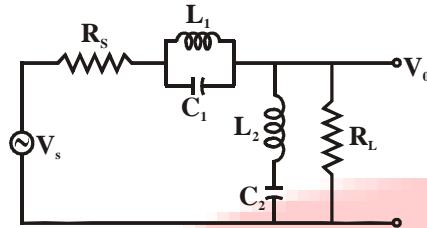


- (A) $\frac{R_2}{R_1 + R_2} \left[1 - e^{-\frac{t}{R_1C_1}} \right] u(t)$ (B) $\frac{R_2}{R_1 + R_2} \delta(t)$

(C) $\frac{R_2}{R_1 + R_2} u(t)$ (D) $\frac{R_2}{R_1 + R_2} \left[e^{-\frac{t}{R_1 C_1}} \right] u(t)$

Sol: Same trick as above.

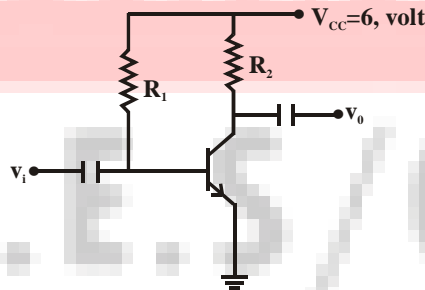
Q.6. The circuit of figure represents a



- (a) Low pass filter (b) high pass filter (c) band pass filter (d) band reject filter

Sol: Put $\omega=0$ and $\omega=\infty$ answer has finite value so it must be Band stop filter.

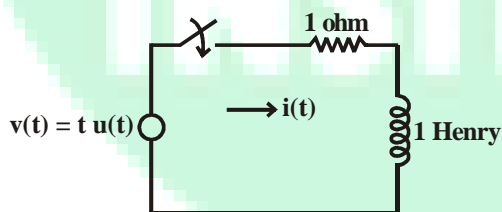
Q.7. In the amplifier circuit shown in figure the values of R_1 and R_2 are such that the transistor is operating at $V_{CE} = 3V$ and $I_C = 1.5 \text{ mA}$ when its β is 150. For a transistor with β of 200 the operating point (V_{CE}, I_C) is:



- (A) (2 V, 2mA) (B) (3 V, 2 mA) (C) (4 V, 2 mA) (D) (4 V, 1 mA)

Sol: For β equal to 150 I_C value is 1.5 mA so for β equal to 200 I_C must increase from 1.5 mA and V_{CE} Value must decrease so correct answer will be (A) here.

Q.8.



The current in the above network is

- (a) $|t - 1 + e^{-t}| u(t)$ (b) $|t^2 - t + e^{-t}| u(t)$
 (c) $|t + 1 + e^{-t}| u(t)$ (d) $|t - 1 - e^{-t}| u(t)$

Sol: For $t=0$ Value of current must be zero because it is a fresh inductor which is possible only in option (A) so correct answer must be (A).

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Class topic tests: 16 class topic tests

Class surprized tests: 16 class surprized tests

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Classes are taken by IES toppers	Most of the faculties are Non IES qualified
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Main faculty is Yogesh Agrawal sir and he is the master of all subjects in Electronics&comm	No faculty of level of yogesh sir is available with those institutes.
You can ask any type of technical doubt any time to Yogesh sir &team.	No such type of person is available with them
Coverage of subject is too vast and exam oriented and for every subject 100-120 hrs are given in class	For every subject hardly 30-40 hrs are given and their main focus is on finishing the course
Our class notes for ECE are the best available notes in market and you can compare with others.	Their main target is finishing the course only.
Famous for short cut methods for objective problems &difficult problems	No short cut methods
Classes are taken by Yogesh sir& team and most of them are North Indian so no language problem	Classes are taken by south Indian faculties & lot of language problems for north Indian student
We believe in name of branded teachers	They have branded institute name only and no branded teachers.
Batch strength is 80-100	They have large size (>200)
Personal interaction in class	No personal interaction in class
In class assignment we have 25 years GATE and 25 years IES questions	None of institute provides such type of assignments
Assignments are done in class only	Not done in classes
10 full course mock tests for GATE are conducted	3-4 Full course mock tests for GATE are conducted
After every test discussion is done by yogesh agrawal sir in class on same say.	They provide simply solution of tests only and no discussion in class.
Only institute which provides detailed solution of GATE exam on same day.	They provided answer only and no detailed solution
Only institute which provides detailed solution of IES exam on same day.	They provided answer only and no detailed solution
Only institute which provides detailed solution of conventional papers of IES	No institute provides solution of conventional paper of IES.
PANACEA GATE File is given for GATE exam	No institute provided such type of file for GATE
We provided demo classes before taking admission	They 1 st take fee and no demo classes are available
will refund fee if student is not satisfied with classes	They will never return your fee
Best result in Electronics&communication	No authenticity about their results