

Digital Electronics

	Date	Sign
Fundamentals of Digital Techniques: Digital signal, review of number systems, binary codes, BCD, Excess-3, Gray, EBCDIC, ASCII, logic gates- AND,	17.01.2019	
OR, NOT, NAND, NOR, EX-OR, Boolean algebra, Error detection and correction, hamming code.	21.01.2019	
Combination Design using Gates: Design using gates, K- map and Quine-Mccluskey methods of simplification.	24.01.2019	
Combinational design using MSI Devices Multiplexers and Demultiplexers and their uses as logic elements, Decoders, Adders/Subtractors, BCD arithmetic	30.01.2019	
circuits, Encoders, Decoders/Drivers for display devices.	02.02.2019	
Design of Sequential circuits: Flip flops: S-R, J-K, T,D, master slave, edge triggered, shift registers, sequence generators, counters- asynchronous	08.02.2019	
and synchronous, ring counters and Johnson Counter.	12.02.2019	
D/A & A/D Converters: D/A converters- weighted resistor and R-2 R ladder, specifications for D/A converters, A/D converters: Sample and hold circuits,	22.02.2019	
Quantization, Parallel-comparator, successive approximation, counting type, dual slope ADC, specifications of ADCs.	29.02.2019	
Digital logic families: Bipolar logic families: RTL, DTL, DCTL, HTL, TTL, ECL, MOS,	11.03.2019	
and CMOS logic families. Tristate logic, interfacing of CMOS and TTL families.	18.03.2019	
Programmable logic devices: ROM, PLA, PAL, FPGA and CPLDS.	21.03.2019	

Electrical Measurements & Measuring Instruments

	Date	Sign
UNITS, STANDARDS & ERRORS: S.I. units, Absolute standards International, Primary, Secondary & Working Standards). True Value,	17.01.2019	
Errors (Gross Systematic Random): Static characteristics of Instruments (Accuracy, precision, Sensitivity, Resolution & threshold).	21.01.2019	
MEASURING SYSTEM FUNDAMENTALS: Classification of instruments (Absolute & Secondary Instruments: indicating, recording & integrating instruments:	24.01.2019	
based upon Principle of operation). Generalized instrument (Block diagram, description of blocks). Three forces in electromechanical indicating instrument	30.01.2019	
(Deflecting, controlling & damping forces). Comparison between gravity & spring controls: comparison of damping methods & their suitability bearing supports,	02.02.2019	
pivot-less supports (simple & taut-band). Scale information, instrument cases (covers).	08.02.2019	
MEASURING INSTRUMENTS: Construction, operating principle, Torque equation, shape of scale, use as Ammeter or as Voltmeter	12.02.2019	
(Extension of Ranges). Use on AC/DC or both. Advantages & disadvantages, errors (both on AC/ DC) of PMMC types, electrodynamic type, moving	22.02.2019	
iron type (attraction, repulsion & combined types). Hot wire type & induction type, electrostatic type instruments. Introduction of Q meter, VTVM, B-H curve	29.02.2019	
WATTMETERS & ENERGY METERS: Construction, operating principle, torque equation, shape of scale, errors, Advantages & disadvantages of Electrostatics & induction type watt meters; single phase induction type Energy meter, Compensation & creep in energy meter.	11.03.2019	
POWER FACTOR & FREQUENCY METERS: Construction, operating principle, torque equation, advantages & disadvantages of	15.03.2019	
Single phase power factor meters (Electrostatics & moving iron types) & Frequency meters (Electrical Resonance type, Ferrodynamic & Electrodynamic types).	18.03.2019	
LOW & HIGH RESISTANCE MEASUREMENTS: Limitations of Wheat stone bridge; Kelvin's double bridge method, Difficulties in high resistance	22.03.2019	
measurements, Measurement of high resistance by direct deflection, loss of charge method, Megaohm Bridge & meggar.	23.03.2019	
A.C. BRIDGES: General balance, Ckt. & Phasor diagram, applications, advantages/disadvantages of: Maxwell's inductance, inductance-capacitance,	25.03.2019	
Hays, Anderson, Owens, De-Sauty's, Schering	28.03.2019	

Signals & Systems	Date	Sign
Introduction to Signals: Continuous and discrete time signals,	17.01.2019	
deterministic and stochastic signals, periodic and aperiodic signals,	21.01.2019	
even and odd signals, energy and power signals, exponential and sinusoidal		
signals and singular functions. Signal representation in terms of singular	24.01.2019	
functions, orthogonal functions and their use in signal representation.		
Introduction to Systems: Linear and non-linear systems, time	30.01.2019	
invariant and time varying systems ,lumped and distributed systems,		
deterministic and stochastic systems, casual and non-causal systems,	02.02.2019	
analog and discrete/digital memory and memory less systems.		
Random Variables: Introduction to Random Variables, pdf, cdf, moments,	08.02.2019	
distributions, correlation functions.		
Linear Time Invariant Systems: Introduction to linear time invariant	12.02.2019	
(LTI) systems, properties of LTI systems, convolution integral, convolution sum,		
causal LTI systems described by differential and difference equations.	22.02.2019	
Concept of impulse response.		
Discretization of Analog Signals: Introduction to sampling, sampling	29.02.2019	
theorem and its proof. Effect of under sampling, reconstruction of a signal from		
sampled signal.		
Fourier Series : Continuous time Fourier series (CTFS), Properties of CTFS,	11.03.2019	
Convergence of Fourier series, Discrete time Fourier Series (DTFS), Properties		
of DTFS , Fourier series and LTI system, Filtering.		
Fourier Transform: Continuous Time Fourier Transform (CTFT),	15.03.2019	
Properties of CTFT, Systems characterized by linear constant- coefficient		
differential equations. iscrete time Fourier transform (DTFT), Properties	18.03.2019	
of DTFT, Duality, Systems characterized by linear constant coefficient		
difference equations.		
Laplace Transform: Introduction to Laplace transform, Region of	22.03.2019	
convergence for laplace transform, Inverse Laplace transform, Properties		
of Laplace transform, Analysis and characterization of LTI systems using	25.03.2019	
Laplace transform, System function algebra and block diagram representations		
, Unilateral Laplace transforms.	28.03.2019	

Electrical Machines-II

	Date	Sign
Induction Machines(A): Basic concept of Induction machines: winding factors, generated e.m.f. and m.m.f distribution, a.c. winding, rotating magnetic field.	17.01.2019	
3-phase Induction Motor: Construction, features, production of torque, phasor diagram, equivalent circuit, performance analysis, torque –slip characteristics, running, light and blocked rotor test, load test on 3-ph I.M.	21.01.2019 24.01.2019	
Induction Machines(B): Effect of rotor resistance, Effect of space harmonics, deep bar and double cage 3ph-induction motor.	30.01.2019	
Starting of 3-ph I.M. Starting methods of squirrel cage and wound rotor induction motor.	02.02.2019	
Induction Generator -Operation, applications, 08.02.2019.		
Single phase induction motors:- Constructional features & double revolving field theory, equivalent circuit, determination of parameters. Split phase, starting methods, types& applications.	12.02.2019	
UNIT-III		
Three Phase Synchronous Generators: Principle, construction, EMF equation, armature winding, armature reaction, equivalent circuit, voltage regulation - synchronous reactance method , Rothert's m.m.f method, Potier triangle method, Output power equation, power angle curve,	29.02.2019 11.03.2019	
two reactance theory, slip test, Transient and sub-transient reactance, synchronization, parallel operation. S.C.R. and its significance, cooling of generators	15.03.2019	
UNIT-IV		
Three Phase Synchronous Motor: Construction, Principle of operation, Equivalent circuit, torque, power developed	22.03.2019	
starting, V-curve, Hunting-causes , effects &reduction , synchronous condenser applications. Comparison between induction motor and synchronous motor, high startig torque motors. 28.03.2019	29.03.2019	

Electrical Engineering Materials & Processes

	Date	Sign
Conductors, Properties of conductors, ACSR, High resistivity materials and their properties, Alloys, Soldering and brazing materials,	17.01.2019	
superconductivity, super conductor materials and their applications.	21.01.2019	
Insulators, classifications of insulators, dielectical materials, glass and ceramics, refractory materials and their uses, optical fibers,	30.01.2019	
laser and opto-electronics materials, semiconductor materials, properties of semiconductor materials, thermosetting and thermoplast materials.	02.02.2019	
Classification of material, Dia, Para, and Ferro magnetic materials-curie study) .Ferromagnetism-Qualitative study of domain theory – Hysteresis material and their applications. Ferrites, Structure and property.	12.02.2019	
Processes used in Plano technology e.g. Lapping, polishing, cleaning, masking, photolithography, diffusion, oxidation and metallization, welding, wire bonding,	29.02.2019	
packaging and encapsulation, Heating- induction and dielectric, Electron beam welding and cutting, annealing, cold & Hot rolling.	11.03.2019	
Paper Setter's Note: 8 questions of 15 marks each distributed in four sections are to be set taking two from each unit. The candidate is required	22.03.2019	
to attempt five questions in all, taking at least one from each of the four sections.	29.03.2019	