

ELECTRONIC COMPONENTS AND MATERIALS - 301					
Code	Course Title	Paper code	Topics		Links
301	ELECTRONIC COMPONENTS AND MATERIALS	6200	CONDUCTORS AND INSULATORS		https://www.youtube.com/watch?v=rRWEcNH0oRA
			MAGNETIC MATERIALS		https://www.youtube.com/watch?v=zFdf2SxHz6s , https://www.youtube.com/watch?v=UdaDs-zKfsA
			JOINTING AND CLEANING MATERIALS	Joint	https://www.youtube.com/watch?v=MQd-cgwNw5w
				Soldering and welding	https://www.youtube.com/watch?v=wX2D3B_mmFw , https://www.mechanicalbooster.com/2018/04/what-is-soldering.html
				Types of Screws	https://tool.guide/types-of-screws/
				Different soldering materials used in electronics	https://www.youtube.com/watch?v=zcpZ7erWcpA
				Adhesive	https://www.youtube.com/watch?v=AGoXjvNa8WU
				Cleaning Materials: IPA (Isopropyl alcohol), CT(Carbon tetra chloride), Acetone Etc.	
			CELLS AND BATTERIES	Principle of a cell , theory of operation	https://www.youtube.com/watch?v=cxSNq9XE3so
				Concept of Ideal voltage and current source.	https://www.youtube.com/watch?v=M07rpgvqw08
				Ampere hour rating	https://www.youtube.com/watch?v=PeaqmjJONj0
				Primary and secondary cells and batteries	https://www.youtube.com/watch?v=sy57Yn-4H5o
				Types of primary	https://www.youtube.com/watch?v=kC9z0yMYAw

			cells: carbon - zinc , mercury oxide, silver oxide , lithium	
			Types of secondary cells; Lead storage battery Solar cells.	https://www.youtube.com/watch?v=cVhrZcPPGNg
		Relays and Switches	relay Characteristics	https://www.youtube.com/watch?v=M5mg6G8ff1M
			Contact types; Specifications and applications of different types of relays.	https://www.youtube.com/watch?v=flknwz1lyul
			Switches: Types of manually operated switches	https://www.youtube.com/watch?v=AbqGWNlItTo
			Keyboards and sensing switches	https://www.youtube.com/watch?v=JYiPZgLuN1c
			Connectors and Packages	level of connections
		types and specifications of connecting devices for connection levels types of Connectors , Factors affecting choice of connectors		https://www.youtube.com/watch?v=DJqUoFrSHy8
			choice of connectors for different applications	https://www.youtube.com/watch?v=FelglfIUfao

ELECTRONIC DEVICES AND CIRCUITS- 302					
Code	Course Title	Paper code	Topics		Links
302	ELECTRONIC DEVICES AND CIRCUITS		PN Junction Diodes	Basic Structure and symbol Forward & Reverse Biasing	https://www.youtube.com/watch?v=uZk8ST9wOwA
				V-I Characteristic	https://www.youtube.com/watch?v=FzZa5IUyfbE
				Various application of Junction Diode	https://www.youtube.com/watch?v=_UjC9bHNkNw
				Special purpose Diodes: Constructional features, symbol and applications of – Zener Diode, Tunnel Diode,	https://www.youtube.com/watch?v=_3KaQUNKgQM
				Schottky Diode, Varactor Diode,	https://www.youtube.com/watch?v=952lhQalOiM
			Diode Circuits	Types of rectifier: Half Wave, Full Wave and Bridge rectifier	https://www.youtube.com/watch?v=yaUMBKjkOjg
			Need of rectification - - Comparison - Average, Peak and rms Values	https://www.youtube.com/watch?v=ckajfi4lpGs	
			Filter Circuits: - Need of Filter Circuits	https://www.youtube.com/watch?v=zfs9WT2n_aE	

			- Types of filter circuits: capacitor, L- type and pie type	
			Rectifier with filter	https://www.youtube.com/watch?v=cMFYpnAG6HY
			Ripple factor	https://www.youtube.com/watch?v=ruEYtTYePRk
		Junction Transistors	Bipolar Junction Transistor (BJT) - Basic Structure	https://www.youtube.com/watch?v=iDAoeEjltbl
			Types: PNP & NPN transistors	https://www.youtube.com/watch?v=uGLz_q_xsVc
			Transistor Configuration: CE, CC and CB mode	https://www.youtube.com/watch?v=dW1TxcvfaYk
			Expression for currents: Alpha (α) and Beta (β), relation between alpha & beta	https://www.youtube.com/watch?v=wZwikViKYLc
			FET (Field Effect Transistor) - Types of FET	https://www.youtube.com/watch?v=g4nBAifUVik
			Compare FET with BJT	https://www.youtube.com/watch?v=eTaRDmGBiPU
			MOSFET and CMOS	https://www.youtube.com/watch?v=2_3eC-4MONY
			Introduction to MESFET	https://www.youtube.com/watch?v=g0DcT8rYF6Y
			- UJT (Unijunction Transistor)	https://www.youtube.com/watch?v=6iQhPJ_rDxk
			working of UJT - Applications of UJT in relaxation	https://www.youtube.com/watch?v=j2jDrCOX8mU

				oscillator and blocking oscillator in hindi	
			Amplifiers	Transistor as an Amplifier CE Amplifier Cascading of Amplifier	https://www.youtube.com/watch?v=Thhw8LNAmgG
				Meaning & necessity of cascade amplifier	https://www.youtube.com/watch?v=kxKHvmJTyNE
				Circuit Diagram of cascade amplifier with transistor coupling: RC coupling, Direct Coupling, Transformer coupling	https://www.youtube.com/watch?v=WPOESCL8XdE
				Classification of Amplifiers: Class A, class B, class AB & class C amplifier.	https://www.youtube.com/watch?v=ty48FI5j7W8
				Frequency response of amplifier - Feed Back Amplifier	https://www.youtube.com/watch?v=BoxSmnPx5F0
				Advantage of negative feedback, block diagram of a feedback amplifier	https://www.youtube.com/watch?v=hU8zx0RGJGO
				OSCILLATOR	Principle of

			Oscillator Types of Oscillators	
			Wein Bridge oscillator - Colpits Oscillator - Hartley Oscillator - Crystal Oscillator	https://www.youtube.com/watch?v=ndla86HEg-Q
		Multivibrators	Basic form of operation Astable (free running) multivibrator	https://www.youtube.com/watch?v=wN6g_q3KPtW
			Monostable (Single shot) multivibrator	https://www.youtube.com/watch?v=ecEabvy7D1I
			Bistable (Trigger) Multivibrator	https://www.youtube.com/watch?v=TG_dfhrqK5w

BASIC ELECTRICAL ENGINEERING 303					
Code	Course Title	Paper code	Topics		Links
303	BASIC ELECTRICAL ENGINEERING	303	Laws of Basic Electricity	energy nature of electricity electric circuits and diagrams the international system of units scientific notation and engineering prefixes current and Voltage the coulomb the ampere	https://www.youtube.com/watch?v=3eASa-TFF0k
				series and parallel combination of resistance, equivalent resistance work and Power energy and work	https://www.youtube.com/watch?v=azK-vVuLwCc
			Magnetic Fundamentals	magneto motive force reluctance permeability flux density	https://www.youtube.com/watch?v=MOAJgVTutt4
				Hysteresis magnetic effect of electric current electro magnetic induction eddy current	https://www.youtube.com/watch?v=zJ23gmS3KHY

				magnetic shielding	
			AC Fundamentals	Concepts of alternating voltage and current Difference between AC and DC voltage	https://www.youtube.com/watch?v=sYfdjH6y5T4
				Concepts of Cycle, Frequency, Period, Amplitude , Instantaneous value, average value, RMS value, Peak value and form factor .	https://www.youtube.com/watch?v=ckajfi4lpGs
				Phasors and relation of V & I Phasors in RL, RC and RLC series circuit. - representation of sine waves on Phasors diagrams	https://www.youtube.com/watch?v=HaFrY0qQ-NU
				Concepts of real (Watt), reactive (VARs) and apparent power (VA) and power triangle	https://www.youtube.com/watch?v=0f7YkVorOmY
			Transformers	use of transformer (Electronics & Electrical) - definition of transformer - Principle of	https://www.youtube.com/watch?v=COwUtIVLjFO

				working of transformer	
				- Classification based on core construction - elementary theory of an ideal transformer	https://www.youtube.com/watch?v=NGSYOfXzCGM
				- EMF equation of a transformer - Voltage transformation ratio(K) And Impedance ratio	https://www.youtube.com/watch?v=6GSpmWccsr8
				- Elementary Knowledge of Special Types of transformers- Auto transformer, Ferrite core type, Potential Transformer (PT) and Current transformer (CT).	https://www.youtube.com/watch?v=uksrFOy7B9k
			DC Machine	Basic Working Principles of D.C. Generator and Motors - comparison of generator and motor action	https://www.youtube.com/watch?v=CHsob52na3U

			- significance of Generated emf and Back emf and their voltage equations	https://www.youtube.com/watch?v=o5l-7mC1Rhk
			Different types DC motor	https://www.youtube.com/watch?v=3PMhn_5KxF8
			Basic motor characteristics- Torque Vs Armature current , Speed Vs Armature current, Speed Vs Torque	https://www.youtube.com/watch?v=09VO1GJ4U7g
		AC Machine		
			construction of motor	https://www.youtube.com/watch?v=KTzd_PueN44
			Basic working principle of operation - production of rotating magnetic field	https://www.youtube.com/watch?v=AzilsBQzt0M
			Torque-slip characteristic of inducton motor	https://www.youtube.com/watch?v=zBzVMuV6Lyg
			construction of a single phase induction motor	https://www.youtube.com/watch?v=_SpwTmCMXqg
			Elementary Knowledge of	https://www.youtube.com/watch?v=PGs4BsWakZE

				different types of single phase induction motor. Their applications in industries & house holds	
			Electrical Safety Measure	Need of earthing - Protection against electric shocks.	https://www.youtube.com/watch?v=tFnqk8BEPP0

NETWORK ANALYSIS 304					
Code	Course Title	Paper code	Topics		Links
304	NETWORK ANALYSIS	304	Network Transformation	- Introduction - Topology-Definitions, - Nodes, - Branches, - Tree, Co-Tree, Twigs	https://www.youtube.com/watch?v=L54sGy74LZU
				- KVL analysis - KCL analysis	https://www.youtube.com/watch?v=V2yKWpzpavA
				- Principle of duality - Reduction of complicated network	https://www.youtube.com/watch?v=6ad3yMYFK4k
				- Superposition Theorem - Reciprocity Theorem - Thevenin's Theorem - Norton's Theorem - Millman Theorem	https://www.youtube.com/watch?v=WK7d9OynHg https://www.youtube.com/watch?v=qw0QExrzoYg
			Resonance	- Quality Factor or Q-Factor - Series Resonance	https://www.youtube.com/watch?v=7Z-v1rOuUhl
				- Resonance frequency, Bandwidth and Selectivity of Series resonance circuit	https://www.youtube.com/watch?v=ILHjEachEpl
				- Phasor diagrams for L-C, R-L, R-C and R-L-C	https://www.youtube.com/watch?v=HaFrY0qQ-NU

				Circuits	
			Steady State & Transient Response	<ul style="list-style-type: none"> - Analysis of step and sinusoidal inputs - Steady state & transient response for - RL Circuit - RC Circuit - forced and unforced response 	https://www.youtube.com/watch?v=EvBeO_9hvGc
			Filters	<ul style="list-style-type: none"> Decibel & Neper-Definitions - Classification of Filters according to Pass & Stop Bands 	https://www.youtube.com/watch?v=jXdv9vip5j0
				<ul style="list-style-type: none"> - Constant K Low pass filter - Constant K High pass filter - Band pass and band elimination filter 	https://www.youtube.com/watch?v=MMdfepnQJ5l
			Two Port Network & Their Parameters		https://www.youtube.com/watch?v=10xq2Q0y7rE&list=PLySVDJoIJATdE8K3Uxmrvkk5KOqj8HFpU https://www.youtube.com/watch?v=Rok0blw4Qyk
			Laplace Transformat ion		https://www.youtube.com/watch?v=98F2cdXZINI https://www.youtube.com/watch?v=K4TL_HaRZhQ

DIGITAL ELECTRONICS - 305					
Code	Course Title	Paper code	Topics		Links
305	DIGITAL ELECTRONICS	305	Number System and Binary Codes	Binary, Hexadecimal, Octal, Decimal and their inter conversion	https://www.youtube.com/watch?v=kAnBaQoJkpo
				1's complement, 2's complement numbers, 9's complement & 10's complement	https://www.youtube.com/watch?v=mzGYu5qBFSE
				Introduction to Binary codes, Weighted, Non Weighted codes, Excess 3 code, Grey code, BCD code, Hamming code	https://www.youtube.com/watch?v=cD3UdzjEVtY
			Boolean Algebra & Logic Gates	Introduction to Boolean Algebra - Law of Boolean Algebra, - De Morgan's theorem, - Simplification of Boolean functions with Boolean laws,	https://www.youtube.com/watch?v=C-C2mtqMVfo

				<p>Karnaugh Map method</p> <ul style="list-style-type: none"> - simplification of Boolean equation using K-Map(up to four variables) 	<p>https://www.youtube.com/watch?v=eihfwcdcu1Q</p>
			Logic Families	<ul style="list-style-type: none"> - Introduction to logic families - DTL, ECL,TTL, C-MOS and their comparison on the basic of their characteristics. - Familiarization of ICs related to digital circuits like 74 series,50 series 	<p>https://www.youtube.com/watch?v=nb11AipMJd4</p>
			Combination Logic	<ul style="list-style-type: none"> - Half adder, - Full Adder, - Half Subtractor, - Full Subtractor, - Binary Adder, - Binary Subtractor, - Encoder, - Decoder, - Multiplexer, - Demultiplexer 	<p>https://www.youtube.com/watch?v=AUoTwRgZkbk</p> <p>https://www.youtube.com/watch?v=3KBfiOKMaWo</p>