Diploma in Electronics Mechanics

Electronics Mechanic is an electronic things repairing vocational trade. The duration of trade is two years with four semesters of six months each. During the course, students are taught about topics like electronic equipment, specializing in repair and maintenance procedures; analyzing a machine such as a computer, determining all of its problems and preparing it to be worked on by a specialist electronics repairman. There are so many ITIs in the country offering this career orienting trade. After passing the trade they have so many jobs options including further studies.

Electronics Mechanic Trade Syllabus

Syllabus of Electronics Mechanic trade as prescribed by various ITIs.

Sem. I		
Sr. No.	Subjects of Study	
	Trade Practical	Trade Theory
1	Trade and Orientation	Introduction to NCVT and certification mechanism
2	Hand Tools and their uses	Identification, specifications, uses and maintenance of commonly used hand tools.
3	Basics of AC and Electrical Cables	Basic terms such as electric charges, Potential difference, Voltage, Current, Resistance. Basics of AC & DC.

4	Cells & Batteries	Battery /Cells
5	Passive Components	Ohm's law and its variables.
6	Transformers	Working principle of a Transformer, Transformer construction, Types of cores used.
7	AC & DC measurements	Introduction to electrical measuring instruments, Importance of meter, classification of meters, forces necessary to work a meter.
8	Soldering & De-soldering and switches	Different types of soldering guns, related to Temperature and wattages, types of tips.
9	Rectifiers	Semiconductor component number coding for different electronic components such as Diodes, Zeners.
10	IC Regulators	Regulated Power supply using 78XX series, 79XX series, Op-amp regulator, 723 regulator, (Transistorized & IC based) voltage regulation, error correction and amplification etc.
11	Computer Hardware, OS, MS office Networking	Basic blocks of a computer, Hardware

		and software, I/O devices, keyboard, types of mouse and their working, Different types of printers, their function and inter-connection and their advantages HDD, CDD, DVD.
Sem. II		
	Trade Practical	Trade Theory
1	Transistor	Construction, Working of a PNP and NPN Transistors. Purpose of E, B & C Terminals.
2	Amplifier	Transistor (CB, CE & CC) configurations and their characteristics and applications
3	Wave shaping circuits	Diode shunt clipper circuits and Clamping /limiting circuits and their applications.
4	Power Electronic Components	Construction of FET, differentiate it with BJT.
5	MOSFET & IGBT	Working of MOSFET, Power MOSFET and IGBT - their types, characteristics, switching speed, power ratings and protection.

6	Opto Electronics	Working and application of LED, IR LEDs, Photo diode ,photo transistor, its characteristics and application, optical sensor, opto-couplers, circuits with opto isolators, characteristics of LASER diodes
7	Basic SMD (2,3,4 terminal components)	Introduction to SMD technology Identification of 2,3,4 terminal SMD components, advantages of SMD components over conventional lead components
8	Basic Gates	Introduction to Digital Electronics
9	Combinational Circuits	Combinational logic circuits such as Half Adder, Full adder, Parallel Binary adders, 2-bit and four bit full adders.
10	Flip Flops	Introduction to Flip-Flop. S-R Latch, Gated S-R Latch, D-Latch.
11	Electronic circuit simulation software	Study the library components available in the circuit simulation software. Various resources of the software.

12	Counter & shift Registers	Basics of Counters, types of counters, two bit and three bit Asynchronous binary counters and decade counters with the timing diagrams
13	Op – Amp & Timer 555 Applications	Block diagram and Working of OpAmp, importance, Ideal characteristics, advantages and applications
Sem. III		
	Trade Practical	Trade Theory
1	Digital Storage Oscilloscope	Block diagram of DSO/CRO and applications of DSO/CRO application of digital CRO, block diagram of function generator.
2	SMD Soldering and De-soldering	Soldering / de-soldering of above components
3	PCB Rework	ESD Control in Electronics
4	Protection devices	Fuse ratings, types of Fuses, Fuse bases, single/three phase MCBs, single phase ELCBs.
5	Electrical control circuits	Fundamentals of single phase Induction motors, synchronous speed, slip, rotor frequency, torque – speed

		characteristics, Starters used for Induction motors.
6	Electronic Cables & Connectors	Cable signal diagram conventions Classification of electronic cables as per the application w.r.t. insulation, gauge, current capacity, flexibility etc.
7	Communication electronics	Radio Wave Propagation – Principle, Fading, Need for Modulation, types of modulation.
8	Microcontroller (8051)	Introduction to 8051 Microcontroller, architecture, pin details & the bus system
9	Sensors ,Transducers and Applications	Basics of passive and active transducers.
10	Analog IC Applications	Discussion on the identified projects with respect to data of the concerned ICs, components used in the project
11	Digital IC Applications	Discussion on the identified projects with respect to data of the concerned ICs, components used in the project

Sem. IV		
	Trade Practical	Trade Theory
1	Fibre optic communication	Introduction to optical fiber as a transmission media, its advantages over other media, properties of optic fiber, testing, losses , types of fiber optic cables and specifications.
2	Digital panel Meter	Different types of seven segment displays, decoders and driver IC s for them. Concept of multiplexing and its advantages.
3	SMPS	Concept and block diagram of manual, automatic and servo voltage stabilizer, o/p voltage adjustment, voltage cutoff systems, study of different types of relays used in stabilizer.
4	UPS	Concept of UPS, Difference between Inverters and UPS.
5	Solar Power (Renewable Energy System)	Need for renewable energy sources, Solar energy as a renewable resource.
6	Cell phones	Introduction to mobile communication, concept cell

		site, hand off, frequency reuse, block diagram and working of cell phones, cell phone features, GSM and CDMA technology.
7	LED Lights	Types of LED panels used in various lighting applications.
8	LCD and LED TV	Difference between a conventional CTV with LCD & LED TVs, Principle of LCD and LED TV and function of its different section. Basic principle and working of 3D TV.