

Product Name :
Basic Electronic Trainer

Product Code :
BASE100



Description :

Basic Electronic Trainer -

The Basic

Electronics Trainer should be a modular course covering the fundamentals, concepts, theory and applications of electronics. The trainer should consist of a base station into which is inserted modular instructional PCB boards that contain components which match the experiments. The set should contain 7 PCB modules. These are able to be inserted into the base station; this enables complete circuits to be quickly and easily assembled to match the exercises. The trainer should be able to conduct a number of experiments which covers basic electronic theory, electronic solid state circuits, semi-conductors, amp circuits and basic digital applications. The base station must be provided with the power supplies and accessories that are required to support the training module boards.

The Basic Electronics Trainer should be included with operation manuals and experiment manuals which includes step-by-step chapters with theoretical information and practical student experiments (sample experiment manual to be provided during bidding process to ensure all the experiments are covered). Each chapter must include student tests with an answer key. The trainer should be able to conduct the following topics of experiments:

- Junction diode characteristics.
 - Zener diode characteristics.
 - Troubleshooting the zener regulator
 - Opto electronic devices.
 - Diode limiter and clamper.
 - Half wave and full wave rectification.
 - Transformer power supply and filter.
 - Power supply trouble shooting
 - Bridge rectifier
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- Transistor familiarization
 - Current gain in CE transistor configuration
 - Collector current characteristic in CE configuration
 - Diode and transistor testing
 - Common emitter amplifier biasing and gain.
 - Common emitter amplifier impedance, power and phase relationships.
 - Trouble shooting a CE amplifier.
 - Emitter follower (Common collector) amplifier.
 - Voltage regulation
 - Three terminal IC regulators

- Load line analysis.
- Cascaded transistor amplifier.
- Frequency response of an audio amplifier.
- JFET
- MOSFET
- Differential amplifier.
- The linear amplifier
- Push pull power amplifier
- Complementary-symmetry push pull amplifier
- Operational amplifier
- Op Amp characteristic
- Negative feedback.
- Op amp circuits
- Non linear Op amp circuits.
- Active filters.
- Hartley oscillator
- Phase shift oscillator
- Op amp oscillator
- Sawtooth (RAMP-Function) Generator
- Schmitt trigger
- The 555 timer
- Troubleshooting Op Amp Circuit
- Digital integrated circuits.
- The inverter, NOR gate, NAND gate.
- Binary addition full adder.

- Flip flops
- Counters.
- Mixers, modulators and demodulators.
- Phase-locked loop.
- Silicon controlled rectifier.
- Uni junction transistor.

Modules:

The Basic Electronics Trainer should include at least 7 experimental board modules that closely follow the courseware. The modules must be made of high quality epoxy coated fiber glass printed circuit board with the electronic components mounted on the surface. Each board should be printed with a clearly laid out silk screened schematic circuit diagram showing circuit construction and operation.

The PCB modules must have all the components requested for the experiments mounted on to them.

Connections should be made by 2mm stackable test leads which are provided together with the modules. The training program should be designed to allow circuit modification by substituting components.

Specifications:

The Basic Electricity Trainer should have the following specifications:

- Student
Base Station: Serves as the platform for carrying out the student experiments. Provides for all the primary needs of the experiment modules.
- Fixed
regulated DC power supplies : +5V, +15V, -15V
- Variable
regulated DC power supply : 0 - 25V
- Potentiometers :
4 units
- Pulse
switches :
2 units
- LED
display :
8 bits
- Toggle
switches :
5 spdt
- Speaker :
2.25 inch, 8 ohm/ 0.25w
- Test
leads :
1 set of 2mm test leads

(experiment manual to be provided during bidding process)

Technical Specification :

Basic Electronic Trainer

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