**OPERATIONAL AMPLIFIER TRAINERS**

**Operational Amplifier Trainer**

 Built in fixed DC supplies of 1V,2V,3V,+15V,-15V @ 250mA

 Vaiable regulated power supply of 0-5V @ 250mA

 Four Op-Amps provided on board by using LM 324 IC, and a single Op-amp using 741 IC.

 Different values of capacitors and resistors, diodes to construct different circuits provided on board.

 One 10kΩ potentiometer is provided on board.

**Function Generator using OP Amp Trainer**

 With Built in fixed power supplies of +15V,-15V @ 250mA

**Active Bandpass Filter using Op-Amp Trainer**

 Built in fixed power supplies +15V,-15V @ 250mA

 Different values of capacitors,resistors and one 10KΩ potentiometer is provided to observe different responses of the filters.

**Active Band - Reject Filter (Wide band)**

 Built in fixed power supplies +15V,-15V @ 250mA

 TL 084 IC is used as Op-amp.

 Different values of resistors and capacitors are provided to vary the output frequencies.

**Active Notch Filter (Narrow Band Filter)**

 Built in fixed power supplies +15V,-15V @ 250mA

 741 iC is used as Op-amp

 Different values of resistors and capacitors are provided to vary the output frequencies.

**Phase Shift Oscillator using Op-Amp Trainer**

 Built in fixed power supplies +12V,-12V @ 250mA

 741 IC is used as Op-amp

 Different values of capacitors are provided to vary the output frequencies.

**Schmitt Trigger using 555 IC and Op-amp Trainer**

 Built in fixed power supplies of +12V,-12V @ 250mA

 IC 741 and IC 555 are used

 Different values of resistors and capacitors are used to vary the output frequencies

**Square Wave Generator using OP-AMP Trainer**

 Built in fixed power supplies +15V,-15V @ 250mA

 The frequency can be varied by varying different sets of resistors and
   capacitors.Amplitude level also can be adjusted by using potentiometers.

 Additinal Op-Amp is given for external use.

**Instrumentation Amplifier using Op-Amp Trainer**

 Built in fixed power supplies of +15V,-15V @ 250mA

 Variable power supply of 0-20mV DC

 Different values of resistors to observe different outputs.

 One 10KΩ potentiometer provided on board.

**High Pass Filter using OP-Amp Trainer**

 Built in fixed power supplies +15V,-15V @ 250mA

 Additional Op-Amp is provided for external use.

 Different values of resistors, capacitors and one 10KΩ  potentiometer provided to vary the output waveforms.

**Low Pass Filter using OP-Amp Trainer**

 Built in fixed power supplies +15V,-15V @ 250mA

 Additional Op-Amp is provided for external use.

 Different values of resistors, capacitors and one 10KΩ potentiometerprovided to observe different output waveforms.

### Sample and Hold using LF 398 IC Trainer