



COLLEGE OF APPLIED SCIENCE, MAVELIKKARA.  
(Managed by IHRD, a Govt. of Kerala Undertaking)  
Govt. BHSS, Campus, Mavelikkara P O, Alappuzha-690 101.  
Ph. 0479-2304494

No. B/152/2013/CASMVK

29/07/2013

TENDER NOTICE

Sealed tenders are invited for the supply of Electronics Lab Equipment for an estimate price of ₹. 4,83,000/- as per the specification detailed below.

Sl.No	Item specifications*	Quantity Required
1	CRO 20MHz dual trace oscilloscope (With component Tester)	10 Nos.
2	Digital IC trainer Kit	10 Nos.
3	Multimeter LCD display – 3 1/2 digit	15 Nos.
4	Function Generator 2MHz function generator with frequency readout	10 Nos.
5	Digital IC Tester	1 No.
6	8086 Micro Processor trainer Kit	10 Nos.
7	Soldering Station	1 No.

\* Detailed specification attached.

Terms and Conditions:

- 1) Rate quoted must be inclusive of all taxes and charges.
- 2) Minimum 2 years on site warranty for all items offered.
- 3) Items must be supplied at CAS, Mavelikkara by the supplier at the address given above.
- 4) Offer for supply of items is acceptable only from manufacturer or their authorized service providers/dealers. So a certificate issued by the manufacturer should be enclosed in case of dealers/service providers.
- 5) Payment will be cleared only on verification of the items as per tender specification and acceptance.
- 6) EMD ₹. 4,830/- in the form of DD drawn in favour of the Principal, should be enclosed with the tender documents.

Superscription : Tender No. 3/2013-14/CASM to the  
purchase of Computer Machinery and Equipment  
Last Date of issue of Tender Form : 31/08/2013 12.30 pm  
Last Date and Time of receipt of tenders : 31/08/2013 3.00 pm  
Date & Time of opening : 02/09/2013 2.30 pm  
Price of Tender Form : Rs. 420/-(Inclusive of VAT)  
Address of officer from whom the forms : The Principal, College of Applied Sciences,  
to be obtained/Submitted. Govt. BHSS Campus, Mavelikkara P O,  
Alappuzha-690 101.(Phone – 0479-2304494)

Sd/-

PRINCIPAL

**Detailed Specification for purchase of Electronic Lab Equipment  
(Tender no. 3/2013)**

**1. 30MHz Dual Trace Oscilloscope**

**Specifications**

DC - 30MHz Bandwidth  
1mV/div Sensitivity on Both Channels  
CH1, CH2 (Independent Channels), CH1 & CH2 (Alternate / CHOP), CH2 INVT, ADD and SUBTRACT  
X-Y Operation  
40ns/div to 0.2s/div Time Base  
140mm Rectangular CRT with Internal Graticule  
Triggering to 40MHz  
Z Modulation (TTL Level)  
8 x 10 cm Display  
TV Triggering Frame (V) & Line (H)  
Line Trigger  
Component Tester/comparator  
Dual Component tester allows comparison of VI characteristics  
Test voltage : 8.6rms  
Test current : 28mA  
Test frequency : 50Hz or 60Hz

**VERTICAL DEFLECTION**

Deflection : 1mV/div to 20V/div.  
Coefficient 5mV/div to 20V/div in 12 (CH1 & CH2) calibrated steps in 1-2-5 sequence. x5 magnification increases sensitivity to 1mV/div and 2mV/div (LED indication).  
Accuracy :  $\pm 3\%$ .  
Bandwidth : DC - 30MHz (-3dB)  
Rise Time : 11.6nsec or less.  
Display Modes : CH1, CH2, CH1 & CH2 Alternate or Chop mode & X-Y, CH1-Y, CH2-X,  
Input Impedance : 1M ohms & 25pF (approx).  
Maximum Input Voltage : 400 Volts (dc + peak ac).  
Internal Trigger Signal : CH1 or CH2.  
TIME BASE Sweep Speed : 18 calibrated steps. 0.5 $\mu$ S/div to 0.2S/div in 1, 2 & 5 sequence.  
Sweep Magnifier : x5 Magnification extends the sweep speed to 100nS/div. x5 Magnification indication with LED.  
Accuracy :  $\pm 3\%$ .

**HORIZONTAL DEFLECTION**

Deflection Coefficient : Same as CH2.  
Bandwidth : DC - 1MHz (-3dB)  
Input Impedance : 1M ohms and 25pF (approx.).

**TRIGGER SYSTEM**

Triggering Mode : Automatic or Normal with Level Control.  
Source : CH1 / CH2 / LINE / EXT.  
Slope : Positive or Negative.  
Coupling : ac / dc / HF reject or TV Frame/ TV Line.  
Trigger Sensitivity : AUTO 1div 30Hz - 30MHz , NORM 1 div 3Hz - 30MHz.  
Standard Accessories : Instruction Manual - 1 No. Input Lead BNC to Crocodile -2 Nos. Component Test Lead (Set) -1 No etc.

**2. Digital IC trainer kit with bread board**

**Specifications**

- 8 TTL Compatible Slide Switches as logic level inputs.
- Logic HIGH and logic LOW are displayed by dual color LED(8 Nos).
- Four crystal generated clock output of 10KHz, 1KHz, 10Hz and 1Hz.
- Sockets onboard to fix the IC's : 16 pin-4nos., 20 pin-2 nos
- Facility for single pulse generation by push button switch.
- Logic probe to check logic LOW, logic HIGH and pulse.
- One seven segment display with BCD inputs.
- Bread board area having more than 1000 TIE points.

- Capable of accepting wire diameters from 0.3 to 0.8mm.
- Built-in Power supply : 5V/1.2Amp.+/-12V1Amp
- Built in SPMS User's Manual, Cables & Connectors.

### 3. Digital Multimeter

#### Specification

Automatic Zero adjustment.

Display : 3½ digit LCD display (2000 Counts)

Selected Range displayed on LCD.

Digit Size : 18mm(H)

Polarity : Automatic, (-) negative polarity indication.

Over range Indication : Highest digit of 1' or '-1' is displayed.

Operating Temperature : 0°C to 50°C

Relative Humidity : < 70%

Storage Temperature : -20°C to 60°C

Relative Humidity : < 80% (With Battery Removed)

Power : Single, Standard 9V battery

Measurement Rate : 3 measurements per second, nominal.

DC voltage: 200mV,2V,20V,200V,1000V(±0.5% rdg + 1 dgts)

AC Voltage: 200mV,2V,20V,200V (±1.0% rdg + 4 dgts)

750V ( ±1.5% rdg + 4 dgt for 750V)

DC Current 200µA,2mA,20mA, (Accuracy±(1.0% rdg + 1 dgt) ,10A

AC Current 200µA,2mA,20mA ( Accuracy : ±1.2% rdg + 4 dgts), 10 A

Resistances & accuracy 200±(1.0% rdg + 3 dgts), 2 K, 20 K, 200 K, 2000 K± (0.8% rdg + 1 dgt) ,20 M,200 M

Accessories : Test Leads, Spare fuse 0.8A/250V battery ,carrying Case, User Manual etc.

### 4. Function Generator

#### Specifications

Frequency Range : 0.01Hz to 2MHz in 8 decade ranges.

Frequency Indication : ±1% ±1 digit.

Output Impedance : 50 ohms

Frequency Indication Accuracy: ±1% +1 digit

Output Waveforms: Sinusoidal, Triangle, Square, Ramp, Pulse, TTL(Sync) & DC Outputs.

Sine Distortion :<1% (typical).

Square Wave Rise / Fall Time <75nsec.

Frequency Stability: <0.5% of the set frequency (after ½ Hour warm up).

Duty Cycle :10% to 90% variable.

Maximum Output Voltage: a) Into 50 ohms 10V p-p output.

b)Open Circuit 20V p-p output.

Amplitude Indication: 3 digit seven segment display (Vp-p) ±5%.

Amplitude Flatness :±0.5dB up to 100KHz range / ±1.0dB for 1MHz range.

Attenuator :Two step attenuators of 20dB & 40dB. Fine attenuation of 20dB through vernier control. (Total 80dB attenuation).

Attenuator Accuracy : ±0.5dB per 20dB at 1KHz.

DC Offset ±10V ±5% (DC + AC peak) in open circuit ±5V ±5% (DC + AC peak) in 50 ohms.

POWER REQUIREMENT: AC Mains Power 230V AC ±10%, 50Hz., 15VA. (Approx.)

Standard Accessories: Instruction Manual 1 No.BNC(M) to Alligator Clip 1 No, etc.

### 5. Digital IC tester

#### Specification

- microprocessors based Digital IC Tester
- tests a variety of digital ICs including microprocessors, peripheral ICs, EPROMs, RAMs, etc., apart from the standard 74 & 54 series of TTL ICs and 40 & 45 series of CMOS ICs.
- No. personality cards / reference IC/IC data required.
- Automatic testing of ICs at 4.75V & 5.25V to locate marginally bad ICs.
- Continuous mode for testing ICs until Aborted. Number of times the test was successful if displayed.

- Step mode to locate faulty pin through discrete LEDs for find the number of unknown good digital IC with facility to locate its functional equivalents for ICs upto 20 pins
- Memory test for EPROM indicates non blank location address with data content. For RAMs bad location address is displayed.
- Buzzer to indicate bad IC,
- Separate field for display of mode of operation (ONE/CON/STP)
- Current drawn is displayed in s separate field for Good ICs.
- Backspace, clear and double digit entry keys for editing IC number
- Remembers IC Numbers for repeated testing of same IC.
- SELFTEST facility during power ON and through keyboard
- Potential free 20 pin and 40 pin ZIF (zero insertion force)
- Protection against wrong insertion of IC under test

## **6. 8086 based Advanced Microprocessor Trainer Kit. Specifications**

Based on Intel's 8086/8088 CPU operating at 2.5/5MHz.

16K bytes of RAM available to the user using 6264

16K bytes of EPROM loaded with powerful monitor Program (2764/27128).

Total on board memory capacity of 128K bytes of RAM and 128 K bytes of EPROM.

Battery backup provided for RAM area.

48/72 I/O lines through 8255.

16 bit Timer/Counter through 8253.

RS-232C for CRT Terminal through 8251 Baud rate selection through DIP switch from 110-19,200 baud.

Analog to Digital converter

25/28 keys hexadecimal keyboard and eight seven segment display.

Resident Monitor with two modes of operation: - Keyboard mode & Serial mode Powerful software commands like GO, EXAMINE/MODIFY REGISTERS, SINGLE STEPPING, BLOCK MOVE, FILL, INSERT, DELETE, INPUT/OUTPUT BYTE & WORD.

Facility for uploading/downloading of files from/to PC.

All Address, Data and Control Signals, are buffered and available at the FRC connector.

In-built Power Supply, User's Manual.

## **7. Soldering station Specifications**

Lead Free SMD Hot Air Soldering Station Iron Solder Welding

- Closed-loop control sensors for temperature accuracy and stability
- Ideal for safe demolition solder QFP, PLCC, SOP, BGA and other chips and components which are temperature-sensitive.
- High Quality heating wire, heating up fast, long service life, welding safety and adjustable temperature constant.
- High Quality air pump for low vibration, noise-free design and maintain a quiet working environment.
- Design includes a Digital LED temperature display, so that the operation more convenient and accurate.
- Anti-static design prevents leakage due to static electricity and damaged components
- Zero control, zero interference, boot or shut down from 0:00, thus reducing impact of interference
- Output power 280W (max)
- Air Pump Membrane type
- Temperature range 100C- 480C
- Air Output 23L/min (The MAX.)

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