

Department of Electrical Engineering  
IEST, Shibpur

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Date:22.02.2017

Sealed quotations are invited for the supply of (i) Cyclone IV based FPGA development board, (ii) 14 bit A/D and 14 bit D/A converter, (iii) True RMS Heavy duty Industrial Digital multimeter and (iv) 70 MHz. 2 channel DSO (detailed technical specifications given below). Last date of submission of sealed quotation is 28.02.2017. Please send your quotations to Prof. D. Ganguly, Dept. of Electrical Engineering.

### **Detailed Specifications**

#### **1. Cyclone IV based FPGA Development Board:**

128 MB (32 M X 32bit) SD RAM , 2MB (1M X 16) SRAM , 8MB (4M X 16) Flash with 8 bit mode, 32 KBit EEPROM, 18 Switches and 4 Push Button inputs, 18 Red & 9 Green LEDs as outputs, 24 Bit encoder/decoder( CODEC) , Line-in , Line-out and microphone-in jacks , 16 \* 2 LCD Module , 3 nos. of 50 MHz. oscillator clock input, Integrated 10/100/1000 GigabitEthernet , should support industrial ethernet IP cores,configurable I/O standards (3.3 / 2.5 / 1.8 / 1.5 V).

#### **2. 14 bit A/D and 14 bit D/A converter card**

One High speed converter card having:  
Two 14 Bit analog to digital converter channels with 150 MSPS  
Two 14 bit digital to analog converter channels with 250 MSPS  
One audio CODEC , with Line-in, Line Out , MIC & Headphone jacks.

#### **3. True RMS Heavy duty Industrial Digital multimeter**

4,000 count, 0.5% accuracy, 0.1  $\mu$ A to 10A dc/ac current measurement, 0.1 mV to 1000V dc/ac voltage measurement, Resistance / Capacitance / Frequency / Temperature / Duty Cycle measurement, Continuity checker, Data hold, Weight less than 400 gm.

#### **4. 70 MHz. 2 channel Digital Storage Oscilloscope**

**Bandwidth** : 70 MHz or more, **Sample Rate** : Minimum 1GS/s real time on eachChannel simultaneously, **Display** : Minimum 7 inch, active TFT colour display, **Zoom** : Oscilloscope should be able to horizontally and vertically expand or compress live or stopped waveforms, **Frequency Counter** : should have built-in dual channel 10 Hz to 70 MHz Frequency Counter, **FFT** : FFT function should be capable of showing both time domain and frequency domain signals simultaneously, **Trendplot** : Should be able to plot measurement values over long periods of time, **Data logger** : Oscilloscope should have built-in data logging facility to save user specified trigger waveforms to a USB device, **Storage memory** : Must be available for waveform storage in USB Flash drive, **Input / Output Ports** : USB host port on front panel for flash drives and USB device on back panel for PC connectivity and printers, **Accessories** : Should be supplied with 2 Nos. 100MHz oscilloscope probes, Operating Manual, Software for PC connectivity, USB cables, Power cord and other standard accessories

*The instrument must meet all EMC (Directive 2004/108/EC, EN 61326-2- 1 Class A; Australian EMC Framework) and Safety standards (UL61010-1:2004, CSA22.2 No. 61010-1:2004, EN61010-1:2001, IEC61010-1:2001)*

**Warranty:** *Minimum 5 Years from the date of supply. Manufacturer must have their own dedicated service centre available in India and details of service centre must be provided while submitting the quotation.*

*Quotations should be submitted either by an OEM or their authorised distributors only. Valid authorisation certificate from OEM is must incase of quotations submitted by distributors.*