Addendum : Electrical Engineering Department: (Tender) 2017-2018:-16.09.2017

Item No.	Particulars	Approx. Qty q	Basic Unit Price a	VAT + Octroi b	Total Amount (a * q) + b
Under DRF 2017-2018 :-					
	STATCOM FACTS CONTROLLER SETUP:: Three phase input AC Source (3Phase Alternator set up) **1 Three phase Alternator set up** 3 Phase / 1 KVA / alternator coupled with suitable AC motor with necessary drive provided for transmission line input. Alternator specification õ 3 phase, 1KVA, 1500 rpm, salient pole type, coupled with 2 hp, 3phase 220volts AC Motor, 1500rpm. with speed sensor and digital speed indicator õ 2 HP / single phase input, with 3 phase output VFD controller to be provided for AC motor Speed control **2 IGBT BASED VOLTGAE SOURCE INVERTER POWER MODULE :** • 600V, 20A 3 Phase IGBT based inverter bridge (SMART POWER MODULE –SPM) , 1200v, 25A Uncontrolled rectifier with capacitors for converting AC input to DC link voltage., Outputs of IGBTs in SPM terminated at Banana sockets • Hall sensors provided to sense 3 phase ac output current , dc link current and the DIPM output currents. • 6 High side and 6 low side High speed OPTO's to isolate gating signals to SPM, Optically isolated fault output from DIPM, Built in control power supply of +/-15vdc, DC voltmeter to measure the dc link voltage, Protection for short circuit, over current, earth fault, over voltage, under voltage and over temperature provided, Input: 1 Phase 230V/300vdc • Output AC: variable frequency and voltage • FRC connectors provided to interface to DSP PWM Controller trainer with SPM. • One number of 1 KVA auto transformers for VSC input voltage. 3 **DSPIC Controller for PWM Generation** This DSP/DSPIC controller is used to generate the PWM signals for Voltage source Converter power Module. • TMS320FC2812 / DSPIC 33EP512MU8154 Based Controller • DSP processor TMS320F2812, 32 position fixed point high speed processor, highest operating frequency 150MZ; • Internal built-in 128K * 16 FLASH, Internal built-in 18K * 16 SRAM; • Internal built-in 4K * 16 BOOT ROM;12 Numbers of PWM Outputs • I/O Termination for Speed sensor interfaceRS232 /USB connector for programming down loading, 20 *4 LCD display • Digital Keys for PWM parameter adjustments, ADC input connector • Built in isolated 5V DC power supply, All are mounted on a nice cabinet with power ON/OFF Switch, 230v ac input				

	Sample Program for DSPIC sample program FACTS control • Facts controller-SSSC sample program, Facts controller-STATCOM Shunt & Series Transformer With Filter , Meter and load set up • One No. of Three Phase 1.5 KVA Special wound transformers act as • Series Transformer with capacitor (5A) & inductor (5A) filter provided for SSSC applications, DIGITAL METERS AND LOAD SETUP • Digital meters provided to indicate sending end, receiving end parameters and Feed back to DSP controllers. • Sending End / Receiving End Parameters like **Voltage, Current, Power factor, Active Power & Reactive Power** • Three Phase RLC Load of 2KVA Capacity is provided as Load **4 Solar panel based 3 Phase AC Source –Grid Connected : GRID Connected Solar power Generation System- 1000W** This set up is designed to study the working principle of Grid connected power generation system using solar system. This set up consists of • One number of 1000W solar Panel is provided and it is fixed on the metal frame • Halogen Lamp array is Mounted on the metal frame for testing solar Panel • Provision to adjust the lamp position in 30-180degree • Provision to adjust the lamp Height in 30-180degree, Specifications • 48VDC Output, 1000W **Battery charger set up with Battery** This set up consists of (1) 12v Battery, (2) Battery Charger with MPPT Technology. Detailed specification of this set up • Four number of 12V /40AH Battery is provided • One number of Battery charger with MPPT Technologies for Solar input • One number of Battery charger with MPPT Technologies for Wind input ▪ Necessary Analogue meter is provided for, Solar Panel output voltage , Current measurement, Battery charger output voltage , Current measurement etc, **DC –AC inverter (1000W)** This set up is used to convert the battery dc voltage to three AC using MOSFET inverter. This set up consists of • MOSFET Based sine wave inverter power circuit • 48/110VDC Input, 230VAC Output, 3 phase, 1000W Capacity • Necessary meter for output ac voltage , current measurement • Single phase Lamp load is provided @ 1000W Ratings, Different load ON/OFF Switch is provided				