QUOTATION BIDS FOR LABORATORIES EQUIPMENT OF ELECTRICAL ENGINEERING DEPARTMENT

RENEWABLE ENERGY POWER PLANTS LAB & INDUSTRIAL DRIVES LAB

Sl. No.	Particulars	Qnty	Specifications
1	Perform experiment to measure solar radiation using Pyranometer on tilted surface at different angles of inclination and plot radiation vs. time characteristics for certain duration.	1	**MAKE: CALTEK** Operating Temperature :-40° to +150° F (-40° to +65° C) Storage Temperature : -50° to +158°F (-45° to +70°C) Transducer : Silicon photodiode Spectral Response (10% points) : 400 to 1100 nanometers Cosine Response Percent of Reading : ±3% (0° to ±70° incident angle); ±10% (±70° to ±85° incident angle) Percent of Full Scale :2% (0° to ±90°) Supplied Cable Length : 3' (0.9 m) I/O Specifications Green wire :Output (0 to +3VDC); 1.67 mV per W/m2 Red & Black wires : Ground Yellow wire : +3 VDC ±10%; 1mA (typical) Temperature Coefficient : +0.067% per °F (+ 0.12% per °C) Reference temperature : 77°F (25°C) Housing Material : UV-resistant PVC plastic WITH DIGITAL DISPLAY UNIT (W/METER2) 4 TO 20 mA O/P WITH ANGEL FINDER & +/- 90 DEG ROTATE ABLE. Half shade ring
2	Perform experiment to plot I-V characteristics of photovoltaic cell module and find out the solar cell/panel parameters (O.C. voltage, Short circuit current, Voltage-current-power at Maximum Power point, Fill factor, Efficiency).	1	• 12 VOLT (0 TO 18 VOLT) 50 VA SOLAR CELL. • SIMULATED SUN LIGHT USING HALOGEN LAMP 500 WATT. FOR LAB USE ONLY • SOLAR CELL BEHAVIOR STUDY. • INBUILT ACTUAL LUX METER. • POSITION OF SIMULATED LIGHT CAN BE ROTATED & INTENSITY ADJUSTABLE. • VOLTMETER & AMMETER INBUILT, FOR THE STUDY OF CHARACTERISTICS. • PORTABLE UNIT. • PATCH CORD CONNECTION FOR THE MAKING OF CIRCUIT. • SIMULATED SUN LIGHT ARRANGEMENT FOR INDOOR EXPERIMENT. • DTET ORDERED SETUP. **MAKE: CALTEK**

3	Perform experiment to measure thermal performance of a solar water heating system.	1	**MAKE: CALTEK** Tank:Tank shall be of periphery. Both inner & outer water tank made of SUS 3042B food grade stainless steel with welded by organ are.The insulated materials made of polyurethane materials in order to protect deception of heat. Tubes : The evacuated glass shall be made of super hard borax and silica comply with following technical specification : Structure :M.S. with proper painted. Materials of glass : Concentrated borosilicate glass 3.3 Absorption coating materials :AL/SS-N-AL/Cu or AL-N-AL Absorption Co-efficient : >_ 0.93 Starting temp. : <_ 25° C Wind resistance:30 m/s Emissivity (En): <_0.08 Max.temp:>_25° C Expected service life: More than 15 years. Absorber plate: Copper profile Heating-up co-efficient : 92% Vacuum tightness:>_5X10-3 Pa Idle sunning property parameter :>250M2d / kW Average heat loss co-efficiently : Ua < 0.8 W (m2 .° C) SPACE REQD: 8 FT X 6 FT X 6 FT (H)
4	Perform experiment to measure thermal performance of a solar cooker with varying reflector.	1	•A mini solar cooker: 2 containers, 0.5 lit each. •Closed metallic chamber. •Solar reflector with adjustable radiation angle. •Constructional details with colored marking.
5	Speed control & speed reversing of AC servo motor	1	a) 2-phase a.c. servomotor - 12V/ 50Hz per phase b) Small generator for loading c) 4-digit speed display d) 3-digit time constant display e) 3½ digit r.m.s. voltmeter f) 3½ digit d.c. panel meter g) Voltage regulated internal supplies h) Detailed literature with sample results **MAKE: CALTEK**

6	Speed control & speed reversing of DC servo motor	1	• Position control of a 12V, 1A d.c. gear motor (50 rpm) • Provision for positive and negative tachogenerator feedback Tacho constant: 2V/1000 rpm approximately • Calibrated dials for reference and output position: resolution 1° • Servo-potentiometers with full 360° rotation • µP based waveform capture/display card • Built-in 3½ digit DVM for signal measurements • Built-in step signal and IC regulated power supplies for electronic circuits • Separate unit for motor in a see-through cabinet • 220V±10%, 50Hz mains operation • Literature and patch cords included • Essential accessories - a CRO **MAKE: CALTEK**
7	Speed control & speed reversing of Stepper motor	1	•VARIABLE OSCILLATOR CKT •AUTO & MANUAL PULSE GENERATOR •CW & CCW ROTATION SELECTION. •LED DISPLAY OF PULSE MOVEMENT •STEPPER MOTOR WITH ROUND SCALE & GUARD. **MAKE: CALTEK**
8	Measure the output voltage of chopper for resistive load varying the frequency and duty cycle	1	•DC STEP UP & STEP DOWN CHOPPER •PROVISION OF RESISTIVE L.OAD •DIGITAL I/P & O/P V & A METERS •CRO/DSO CONNECTION PROVISION TO OBSERVE PULSE O/P •VARIABLE FREQ. & DUTY CYCLE PROVISION. **MAKE: CALTEK**