

# Department of EEE:: CBIT(A)

## MODROBS -SPECIAL ELETRICAL MACHINES

### Technical specifications of the equipment to be procured

EEE/SEM-2019-20/101

#### Set – I V / F Control of 3 Phase SQIM

- a. 2 HP / 415 V / 3 Phase / 50 Hz/TEFC / Sq. Cage Induction Motor with Mechanical loading arrangement having round dial scales and friction belt for torque measurement
- 1a ~~If~~ Approximate 2 Ft. Height elevated base frame with anti vibration pad if required
- B. Control panel consisting TPM MCB, Industrial VFD Panel, AC Voltmeter, AC Ammeter and required indicators.

#### Set – II DC Motor # 3 Phase Alternator set

- A. 5 HP / 220 V / 1500 RPM / Shunt Wound DC Motor coupled to 3 KVA / 415 V / 3 Phase / 1500 RPM / 50 Hz. / Four Pole / Rotor Wound / Stator Excited / Separately excited / Manually Regulated Salient Pole Alternator with base and couplings.  
~~If~~ Approximate 2 Ft. Height elevated base frame with anti vibration pad if required
- B. Control Panel consisting following components. DC MCB 1 no., 3 point Starter 1 no., suitable 25 A DC Ammeter 1 no. for armature current, suitable 2 A DC Ammeter 1 no. for field current , 300 V DC Voltmeter 1 no., Suitable Field Rheostat for motor field control 1 no. (External), 5 A AC Ammeter 1 no., 2 A DC Ammeter 1 no., 500 V AC Voltmeter 1 no., 2 A Separate excitation controller unit for Alternator 1 no., other required indicators & terminals. Field failure protection for D.C Motor.
- D Phase / 415 V / 5 A / wire wound / resistive load bank controlled by rotary switches in 6 steps.
- E Cont. variable / 415 V / 4.2 A / 50 Hz. / 3 Phase / Inductive Load ( for lagging PF Loading )

- F 3 Phase / 415 V / 5 A / 50 Hz. / Capacitive load bank controlled by rotary switches in 5 steps. Complete with Charging – discharging Bulb mounting holders (without bulbs. 60 W bulbs to be arranged locally) ( for leading PF Loading )
- G Synchronizing Panel for synchronizations of two Alternator set or Alternator with Mains. Consisting of voltmeter – 1 No., Frequency meter– 1 No., lamp Board bank for Lamp Method , Phase Sequence Meter – 1 No., Synchro scope – 1 No, necessary switches, fuses & indicators.

### **Set - III Brake Test on DC Series Motor.**

3 HP / 220 V / 1500 RPM / DC Series Motor with Mechanical Loading arrangement having Round dial scales and Friction Belt for Torque Measurement

5 HP / 220 V / 1500 RPM / DC Series Motor with Mechanical Loading arrangement having Round dial scales and Friction Belt for Torque Measurement

If 2 Ft. Heighted elevated base with anti vibration pad if required ( at extra cost as mentioned )

Control Panel consisting DC MCB, 2 point Starter, 2 Nos. DC Ammeter, 1 No. DC Voltmeter, 1 No. Field Diverter ( Rheostat type - External) all other indicators & terminals required.

### **Set - IV -A PMSM Motor**

#### **( Lab Experiment Purpose )**

5 HP / 415 V / 3 Phase / 1500 RPM / Hybrid – Self start Permanent magnet Synchronous Motor complete with Mechanical loading arrangement having 2 No. round dial scales and friction belt for torque measurement.

With 2 Ft. elevated base and RPM Sensor ( No specific controller needed )

Powder Coated Control Panel made of 16 SWG MS Sheet with printed Polycarbonate facia in front for better look consisting, TPN MCB 1 No. , DOL Starter 1 No., Digital RPM Meter 1 No., 500 V AC Digital Voltmeter 1 No, 10 A AC Digital Ammeter 1 No., Digital Combi meter 1 No., All other required indicators and terminals. Controller?

**Set - IV- B****PMSM Motor****(Elaborate Drive study Purpose )**

1 HP PMSM Motor with Mechanical loading arrangement having  
2 No. round dial scales and friction belt for torque measurement. With Elaborate Drive to study.

**Set - V A****BLDC Motor****( Lab Experiment Purpose )**

0.5 HP / 48 V / 3000 RPM base / BLDC Motor complete with Mechanical loading arrangement having linear scales for torque measurement. Table top model. Complete with control panel having 48 V DC Supply provision, industrial type **inbuilt BLDC Controller**, DC Voltmeter and DC Ammeter. Required Indicators

**Set - V B****BLDC Motor****( Elaborate Drive study Purpose )**

1 HP BLDC Motor with Mechanical loading arrangement having  
2 No. round dial scales and friction belt for torque measurement. With Elaborate Drive to study. ( **Measurement parameters and metering required?**

**Set – VI****SRM - Switch Reluctance Motor setup**

1 HP SRM Motor with Mechanical loading arrangement having  
2 No. round dial scales and friction belt for torque measurement. With Elaborate Drive to study. ( **Controller and Measurement parameters and metering required?**

**Set – VII****DFIG Set – Doubly fed Induction Generator based wind energy / Simulation conversion system.**

3 HP / 220 V / 1500 RPM / DC Shunt Motor coupled with 3.0 HP / 415 V stator / approx 210 V rotor / 3 Ph. Slipring Induction Motor as DFIG. Complete with FPGA converter and back to back Inverter module.

**Alternatively**

**3 HP / 220 V / 1500 RPM / DC Shunt Motor coupled with 3.0 HP/ 415 V stator / approx 210 V rotor / 3 Ph. Slipring Induction Motor as DFIG.**

**(DFIG Set ( only machine set )**

If 2 Ft. Heighted elevated base with anti vibration pad if required.